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To Release or Not to Release? Preferences for Home Equity Products in Retirement

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To Release or Not to Release? Preferences for Home Equity Products in Retirement

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Abstract

How do retirees choose among home equity release products? Despite housing wealth being households' largest asset, little is known about preferences for different equity release products. We conduct a survey experiment comparing home annuities, reverse mortgages, and an opt-out option among the German adult population. We find that presentation format (simultaneous vs. sequential) does not affect product choices. The majority of participants prefer no equity release product. Among those selecting equity release, home annuities are preferred over reverse mortgages. Individual characteristics, in particular risk tolerance, bequest motive, and financial literacy predict choices. The latter highlights the importance of consumer education given the complexity of these long-term financial decisions.

Keywords: *Equity release products, reverse mortgage, home annuity, retirement planning, financial literacy*

JEL Classification: *D14, G20, G51, G53, J26*

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1. Introduction

Housing wealth constitutes a large, if not the largest, component of household assets, and homeownership often serves as a key element of old-age provision. However, this creates a critical decision problem for retirees seeking to manage their wealth in old age. While owning a home provides rent-free housing in later life, retirees wishing to supplement their income while ageing in place must find ways to unlock the capital tied up in their property. Home equity release products offer one potential solution, making it important to understand how retirees approach the decumulation of illiquid assets. Prior empirical work examining stated demand for equity release products has generally focused on a single product type (e.g., Davidoff *et al.*, 2017; Dillingh *et al.*, 2017; Fong *et al.*, 2021), whereas retirees in practice consider a broader set of alternatives, including the choice not to release housing equity.

This paper fills this gap by analyzing how individuals choose among different home equity release options. We investigate three key questions: How do individuals respond to different products when making selection decisions? Does the presentation format of available options influence equity release choices? Which product features and individual characteristics drive demand for these products? To our knowledge, this is the first study to examine a comprehensive choice set – comparing a home annuity, a reverse mortgage, and an opt-out option – using individual-level data from a survey experiment.

We conduct a survey experiment with a representative sample of the German adult population. Participants are presented with a vignette featuring a retired couple living in a debt-free home. Participants advise the couple on how to utilize their property during retirement. This hypothetical framing serves three purposes. First, it simplifies the decision environment. Since participants must evaluate complex financial products they may never have encountered, the vignette provides a straightforward scenario independent of their own potentially more complicated circumstances. Second, presenting product options in the context of an elderly couple allows us to abstract from individual heterogeneity, enabling meaningful comparisons across all participants. Third, this approach permits inclusion of both homeowners and renters in our sample.

The experiment presents three options: a home annuity, a reverse mortgage, and "no financial product". A home annuity entails that pensioners sell their home in exchange for a lifelong right of residency and

either a lifelong or limited monthly payment. With a reverse mortgage, pensioners take out a loan from a bank which is paid out on a monthly basis or as a lump sum and is repaid when the borrower dies or moves out for good. Thus, these products differ substantially in their implications. In the case of a reverse mortgage, the pensioners remain the home owners and are responsible for the maintenance of the property. If they want to move to a nursing home, they cannot rent the house but have to sell their home and use the proceeds for the nursing home. In the case of a home annuity, the home annuity provider is the new owner of the property and is responsible for its maintenance. In the event of needing care, the pensioners can rent out their home. The "no financial option" entails that the pensioners keep living in their home and do nothing else with their property. The features of the two home equity release products are based on available products in Germany at the time of the experiment.

Our experimental design manipulates how these options are presented. The control group views all three options simultaneously: a "product choice including opt-out choice" format that directly reveals overall demand for equity release products. The treatment group encounters the three options sequentially. First, participants choose between the two equity release products (the "product choice"), requiring them to evaluate product characteristics directly without an immediate opt-out option. Second, they compare their selected equity release product against the "no financial product" option (the "opt-out choice"). This design allows us to assess whether presentation format influences product demand.

Our experiment yields three main findings. First, when choosing between the two home equity release products, participants select the home annuity more often than the reverse mortgage. Second, across all options, the "no financial product" option emerges as the most popular choice. This may reflect the inherent complexity of the financial decision. The results are in line with the reasoning in Bartsch *et al.* (2021) that home annuities are more straightforward and thus easier to comprehend. Additionally, although Germany's home annuity market remains very small, these products are still more common than reverse mortgages. This contrasts with most other countries where reverse mortgages are the more common option (e.g., Alai *et al.*, 2014; OECD, 2024). However, cross-country comparisons remain problematic because studies examine different population subgroups and employ varying response

scales when measuring interest in reverse mortgages.[3] Third, our findings show that the equity release decision is not determined by the presentation of the offer. The difference between final decisions across the two presentation formats is not statistically significant. Instead, we identify other factors, in particular risk tolerance, bequest motive, and financial literacy, playing crucial roles in the decision process.

For feasibility reasons, our vignette specifies only the core characteristics of a couple, i.e., their age, the value of their home, their monthly pension income, and the fact that their pension income is sufficient to make ends meet in everyday life. We deliberately leave other details such as bequest motives, risk tolerance, or additional wealth unspecified in the introductory text. This creates space for participants to project their individual circumstances onto the scenario. We find that higher risk tolerance, homeownership status, and trust in financial institutions drive demand for equity release products, particularly reverse mortgages. Conversely, higher household disposable income, stock market experience, higher financial literacy, bequest intentions, and positive health expectations correlate with preference for the "no financial product" option, thereby decreasing demand for equity release products. These patterns corroborate findings from the existing literature (e.g., Jones *et al.*, 2012; Fornero *et al.*, 2016; Davidoff *et al.*, 2017; Hanewald *et al.*, 2020; Eling *et al.*, 2021).

Our paper contributes to the broader literature on wealth decumulation during retirement. Previous studies have primarily examined the decumulation of liquid financial wealth and the so-called annuity puzzle, the question of why retirees rarely convert savings into lifelong annuities despite their theoretical appeal (e.g., Brown *et al.*, 2008; Brown, 2009). This strand of work has explored choices such as lump-sum payouts versus lifelong annuities from accumulated retirement savings (e.g., Bütler and Teppa, 2007; Hurwitz *et al.*, 2020; Brown *et al.*, 2021) and the role of risk and capital market returns in different withdrawal plans (e.g., Kieren and Weber, 2022; Bucher-Koenen *et al.*, 2025). Our paper, in contrast,

[3] In the Netherlands, for homeowners aged 45 and over, the mean interest in taking out a reverse mortgage loan once retired is 2.7 on a scale from 1 "not interested" to 5 "very interested" (Dillingh *et al.*, 2017). The intention to use reverse mortgages among U.S. homeowners aged 58 and older, is on average 1.6 (on a Likert scale from 1 "not likely at all" to 7 "very likely"), which reflects actual demand numbers in the U.S. (Davidoff *et al.*, 2017). In Singapore, a quarter of homeowners aged 50 and older would be interested in reverse mortgages if they were to become available (Fong *et al.*, 2021). And for China, Hanewald *et al.* (2020) find that 89% of older Chinese homeowners would be interested in a new reverse mortgage product, and 84% of adult children would recommend such a product to their parents.

studies the decumulation of illiquid housing wealth. Given that housing wealth often represents households' largest asset, understanding decumulation strategies for illiquid assets is equally important.

We also contribute to the growing literature on equity release products, which encompasses optimal demand for reverse mortgages in life-cycle models (e.g., Cocco and Lopes, 2020; Jang *et al.*, 2022; Hambel *et al.*, 2023; Andréasson and Shevchenko, 2024), long-term care insurance and reverse mortgages (e.g., Shao *et al.*, 2019; Hanewald *et al.*, 2022; Michaud and St. Amour, 2023), attitudes towards and knowledge on reverse mortgages (e.g., Fornero *et al.*, 2016; Davidoff *et al.*, 2017; Choinière-Crèvecoeur and Michaud, 2023), and pricing of reverse mortgages with regard to the no-negative equity guarantee (e.g., Siu-Hang Li *et al.*, 2009; Dowd *et al.*, 2019; Thomas, 2021). Most closely related to our paper are studies that examine the stated demand of equity release products in surveys. Several studies focus on hypothetical demand for reverse mortgages: Fornero *et al.* (2016) in Italy, Dillingh *et al.* (2017) in the Netherlands, Davidoff *et al.* (2017) in the U.S., Hanewald *et al.* (2020) in China, and Fong *et al.* (2021) in Singapore. These studies ask for general intentions to buy a reverse mortgage or for individuals' general interest in reverse mortgages.

We extend these approaches in two significant ways. First, we incorporate a vignette into our experimental design. Rather than focusing on personal interest in equity release products, we create a generalized setting that abstracts from individual heterogeneity, enabling clearer identification of decision-making patterns. Second, we expand the choice set beyond reverse mortgages to include home annuities and an explicit opt-out option. While theoretical studies have analyzed optimal choices between home reversion plans and reverse mortgages (e.g., Hanewald *et al.*, 2016; Alai *et al.*, 2014), to our knowledge this is the first study to examine this choice using individual-level survey data and to provide experimental evidence on equity release decisions in the German context.

The paper is structured as follows: Section 2 describes the institutional setting in Germany and abroad. Section 3 provides details on the data, the experimental design, and the hypotheses. Section 4 examines whether participants understood the experiment and engaged seriously with the task. Section 5 presents the results on how presentation format affects demand, while Section 6 analyzes other demand drivers. Section 7 concludes.

2. Institutional background

2.1. German market for home equity release products

The first home reversion plan was offered in Germany in 2004. Bartsch *et al.* (2021) estimate that between 500 and 1,000 homes were sold through home reversion plans by 2020. Reverse mortgages entered the market later: an initial attempt in 2006 failed, but in 2009 the first national reverse mortgage product was successfully launched. However, the provider became insolvent in 2013 and exited the market. Afterwards, other players such as public banks and insurance companies offered reverse mortgages but eventually left the market due to lack of demand. By 2015, only approximately 200 reverse mortgages had been sold in Germany (Ben-Shlomo, 2015). Consequently, when we conducted our experiment in 2020, the German market for equity release products was very small (Bartsch *et al.*, 2021).[4]

Since 2020, however, the market has experienced modest growth. Although no major reverse mortgage provider has emerged[5], new players have entered the market and introduced alternative products.[6] One new product involves the sale of the home with registration of a life tenancy, whereby property sellers can live in or rent out the property free of charge until the end of life. Under this arrangement, sellers remain the economic owners of the property while buyers become the legal owners. Another alternative are partial sales of the home, in which buyers acquire shares in and become co-owners of the property. When sellers wish to retain full occupancy, typically to continue residing in the property, they pay buyers a usage fee.

Germany currently lacks both state guarantees and regulatory frameworks for home equity release products. In contrast, extensive public guarantees play an important role in the U.S. reverse mortgage market, with the federal government insuring lenders against loan default losses. While such government support could catalyze a German reverse mortgage market, its desirability remains questionable given that costs may substantially exceed benefits (Bartsch *et al.*, 2021).

[4] Table B1 in Appendix B contains more details on the German market for home equity release products and its most important market players.
[5] There are individual offers available from banks or savings banks. See Finanztip (2021), https://www.finanztip.de/immobilienverrentung/umkehrhypothek/, last accessed September 11, 2024.
[6] For a comprehensive overview, see Sanftenberg *et al.* (2022).

A regulatory framework establishing minimum standards for products, advisory services, and providers, as well as for calculating the regulatory capital requirements for reverse mortgages, would benefit both suppliers and consumers. Providers themselves have identified legal risks as a barrier to introduce reverse mortgages (Bartsch *et al.*, 2021). Clear regulatory guidance would enable providers to manage risk exposures appropriately (OECD, 2024, pp. 158ff), while consumers would benefit from enhanced product suitability assessment and risk mitigation measures such as no-negative equity guarantees (NNEG) and tenancy protections.

2.2. International comparison

Equity release products are more common in other countries such as the United States, the United Kingdom, and Australia.[7] Among these, the U.S. has the most developed market, where reverse mortgages were introduced in 1961 (Ben-Shlomo, 2015) and expanded under the federally insured Home Equity Conversion Mortgage (HECM) program established in 1988 (Haurin *et al.*, 2016). Today, approximately 94% of all U.S. reverse mortgage contracts are covered by HECM, leaving only a small market segment to private providers (Mayer and Moulton, 2022). However, despite this institutional support, participation remains limited, with fewer than two percent of older homeowners holding reverse mortgages (Mayer and Moulton, 2022).

In the U.K., the reverse mortgage market operates entirely through private providers with no public subsidies or guarantees. Instead, a robust regulatory framework has been established (Ben-Shlomo, 2015; Bartsch *et al.*, 2021), including no-negative-equity protections that prevent borrowers from becoming over-indebted. Relative to the size of its retiree population, the U.K. market is nearly five times larger than that of the United States and has grown rapidly in recent years, with major life insurers among the leading providers (Mayer and Moulton, 2022).

In Australia, equity release options fall into three main categories: the government's Home Equity Access Scheme (HEAS), reverse mortgages, and home reversion products (Hanewald and Bateman, 2024). The HEAS allows older homeowners to draw on their housing wealth while deferring repayment

[7] For an overview covering the EU and the U.S., see Haurin and Moulton (2017). Al-Umaray *et al.* (2018) and Hoekstra and Dol (2021) both provide an overview for six European countries covering Germany, Hungary, Ireland, Italy, the Netherlands, and the U.K.

until the home is sold. Since 2019, several policy reforms, such as higher borrowing limits, broader eligibility, and the addition of lump-sum and no-negative-equity features, have made the scheme more appealing, contributing to higher participation. Reverse mortgages are offered by banks, non-bank lenders, and a South Australian State Government organization. Although the number of outstanding contracts has grown to several tens of thousands (Hanewald and Bateman, 2024), the overall market for both HEAS and reverse mortgages remains limited relative to the size of the retiree population.

3. Data, experimental design, and hypotheses

3.1. Data

To study home equity release product choices in Germany, we conducted an online experiment with a representative sample of the German population aged 30 and older (N=2,660). The experiment is part of a survey called "Social Security Systems", which aims to provide a comprehensive overview of the retirement provision situation of households in Germany with a focus on wealth decumulation and households' wealth management during retirement. The questionnaire contains the following question blocks in this order: expectations, home ownership, preferences and attitudes, retirement provision, wealth, financial literacy, debt, marital status and household composition, and household income. Our experiment was carried out after the questions on wealth, approximately in the middle of the survey. The survey was conducted from October 8 to December 9, 2020. The answers were collected with a self-completion questionnaire, which was filled out online.[8]

[8] Participants were recruited using both CATI (Computer Assisted Telephone Interviewing) (N=595) and an online panel (N=2,065). The CATI target selection consists of two components. First, using landline phone numbers, participants were selected with the "next birthday method" within a selected household. Second, using mobile phone numbers, the called party was the immediate target for questioning. CATI has the disadvantage that younger target groups, e.g., those under than 40 years, are harder to reach by telephone because they often no longer have a landline phone. In addition, they are more likely to block unknown numbers on their cell phones, for example to avoid advertising calls. In contrast, online panels can more easily represent a younger target group. However, online panels alone cannot provide representative results either, since only 80% of the German population uses the internet. Hence, the combination of these two recruitment methods ensures a representative sample of the German-speaking resident population. Participants recruited by phone received a five Euro shopping voucher, while the panel operator compensated the online panel participants.

Table 1: Summary statistics

Table 1 shows the summary statistics of participants' socio-demographic characteristics and control variables used in the empirical analyses. The minimum age is 30 years. The maximum age is 92 years. All variables are described in Table C1 in Appendix C. Data is weighted.

Variable	N	Mean	Median	Std. Dev.
Demographics				
Female	2,656	0.527	1	0.499
Age (in years)	2,660	55.832	56	14.881
Household monthly disposable income	2,266			
Less than 1,500 Euro	629	27.75%		
1,500 to less than 2,500 Euro	623	27.48%		
2,500 to less than 3,500 Euro	523	23.09%		
3,500 Euro and more	491	21.68%		
Retired	2,660	0.404	0	0.491
Controls				
Risk tolerance (0-10)	2,654	4.194	4	2.536
Stocks, equity funds, property funds (dummy)	2,636	0.300	0	0.458
Financial literacy score (0-5)	2,660	2.608	3	1.454
"Big Three" correct (dummy)	2,660	0.330	0	0.470
Homeownership (dummy)	2,660	0.451	0	0.498
Bequest motive (dummy)	2,650	0.585	1	0.493
Estimated future health (0-10)	2,644	6.296	7	2.279
Priv. supplementary nursing care insurance (dummy)	2,657	0.160	0	0.367
Trust in financial institutions (0-10)	2,657	4.335	5	2.594

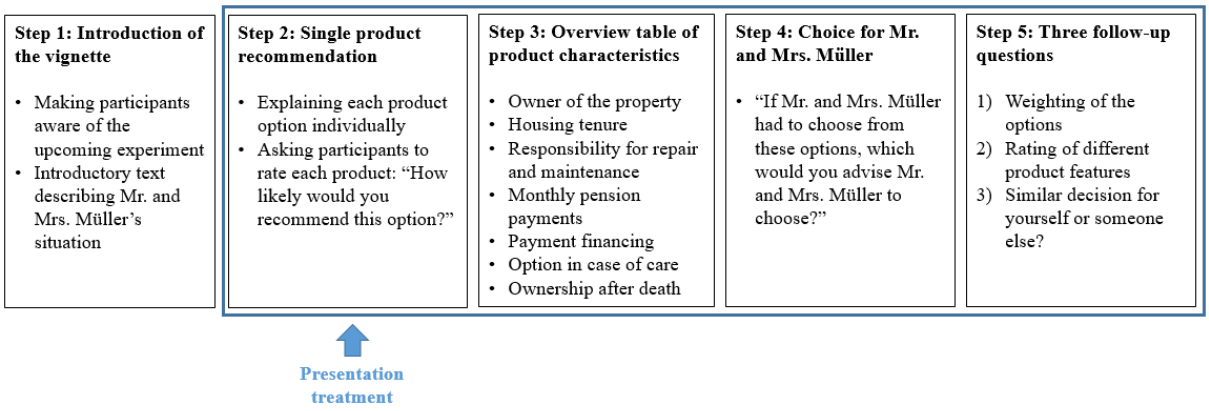
Table 1 shows the summary statistics of all the survey variables employed in our analysis. Table C1 in Appendix C contains definitions of all variables. Table C2 in Appendix C provides an overview of their respective values in the German population and shows that our sample is largely representative.

3.2. Experimental design

Experimental flow

The experiment consists of five steps introducing participants to two home equity release products and the "no financial product" option (Figure 1). The exact wording of the relevant survey questions and screenshots are provided in Appendix A.

Figure 1: Experimental flow



Notes: Figure 1 shows the steps that participants complete during the experiment. The presentation treatment takes effect in Step 2, i.e. participants in the sequential treatment go through Steps 2 and 5 twice. For more details on the presentation treatment see Figure 2.

Step 1: Vignette. All participants are presented with the situation of the couple Mr. and Mrs. Müller. The introductory text reads as follows:

> *"Mr. and Mrs. Müller currently live in their own house. They are 70 years old, both are retired and healthy for their age. The value of their home is 339,000 Euro and was recently determined by an independent appraiser. The house is debt-free. Together, the two receive a monthly pension income of 2,500 Euro after taxes*[9]*, which helps them make ends meet well in everyday life.*
>
> *Now the two are considering how to deal with the house in old age and are faced with the following alternatives: […]"*

Step 2: Product recommendations. Each participant is shown the three product options one-by-one in randomized order. After reading each description, participants rate how likely they are to recommend the option on a Likert scale ranging from 0 ("not at all") to 10 ("very likely"). In the following, we call this the "single product recommendation".

[9] The value of Mr. and Mrs. Müller's monthly pension income after taxes is based on the old-age security report (BMAS, 2020). After the deduction of taxes and social security contributions, senior married couples achieve an average monthly net income of 2,907 Euro. In the old federal states, the average monthly net income is 2,989 Euro, in the new federal states the respective amount is 2,577 Euro (BMAS, 2020, p. 95f). Hence, the amount of 2,500 Euro implemented in our experiment is a lower bound since the text does not specify where in Germany the couple resides.

Step 3: Summary table. The participants then see an overview table which summarizes the main product characteristics, such as ownership of the property, duration of the housing tenure, and maintenance responsibility.

Step 4: Product choice. Participants are asked which product option they would advise the couple to choose. In the following, we will refer to this vignette choice as the "product choice".

Step 5: Follow-up questions. Finally, participants answer three questions about the difficulty of the task, the importance they assign to specific product features, and whether they have already made a similar decision in real life before.

Equity release products in the experiment

In the experiment, participants are presented with two home equity release products – a home annuity and a reverse mortgage – as well as the option to choose "no financial product" (see Table 2). The products reflect the main forms of equity release and their characteristics available in Germany at the time of the survey. To keep the task manageable, we use stylized product descriptions presented as hypothetical cases for an identical household. This design abstracts from individual heterogeneity along the defined household characteristics to ensure comparability across participants.[10] Participants are informed that the couple can use each equity release product to unlock the financial wealth tied up in their home to supplement their monthly retirement income and raise their standard of living without having to move. We keep the monthly payment constant across the equity release options to eliminate financial differences between the products from influencing participants' decisions during the experiment. Instead, we aim to focus participants' attention on the different properties of the two contracts.

Home annuity. The couple sells their home to an annuity provider but retains lifelong residence rights. They receive a monthly payment of €388 for the rest of their lives, recorded in first rank in the land

[10] Characteristics fixed by the hypothetical setting are, for example, the house price, the monthly payments, and the contract details. No details are provided concerning whether the couple has children or a bequest motive, for instance.

Table 2: Product characteristics

Table 2 shows the overview table of the product characteristics of the three options – home annuity, reverse mortgage, and "no financial product" – as presented in Step 3 of the experiment.

Characteristics	Home annuity option	Reverse mortgage option	"No financial product" option
Owner of the property	Home annuity provider	Müller Family but burdened by loan	Müller Family
Housing tenure	For life	For life	For life
Repair	Through home annuity provider	By Mr. and Mrs. Müller	By Mr. and Mrs. Müller
Monthly pension	388 Euro	388 Euro	0 Euro
Payment financing	Through home annuity provider	Through bank loan	–
Option in case of care	Renting is possible	Renting is excluded, sale of the house is possible	Rental or sale possible
Owner after death	Home annuity provider	Heirs, but with a loan burden, heirs can repay the loan amount drawn down to the bank and thus keep the house.	Heirs

register along with the lifelong residence rights. The annuity provider is responsible for maintenance and may not resell the property during the couple's lifetime. If the couple requires nursing care, they can rent out the house and the rental income can be used to cover costs. Payments continue for at least five years; if the couple dies earlier, heirs receive the remaining payments for that period. If the couple lives longer, heirs receive nothing.

Reverse mortgage option. The couple retains ownership but borrows against the property through a fixed-rate mortgage secured by a land charge. Monthly payments of €388 are guaranteed for life via an annuity policy, which takes over the monthly annuity payments when the loan is exhausted. Maintenance remains the homeowners' responsibility. At contract end (death or move-out), the loan is repaid from the property's sale value. Residual-debt insurance, which is concluded together with the contract for the reverse mortgage, protects against negative equity. Heirs may repay the loan and keep the property. In case the couple moves to a nursing home, any surplus from the sale can be used to cover nursing costs.

Opt-out option. The "no financial product" option can be considered as an opt-out option. The couple continues living in their home without releasing equity. Maintenance costs are paid from pension income, and the property passes unencumbered to their heirs. In case the couple moves to a nursing home, the house can be rented or sold to finance care expenses.

Presentation treatment

The key experimental manipulation concerns the presentation format of the product options. Participants are either introduced simultaneously (control group) or sequentially (treatment group) to the three product options. Participants are randomly assigned to one of the two groups. Randomization checks are reported in Table B2 in Appendix B.[11]

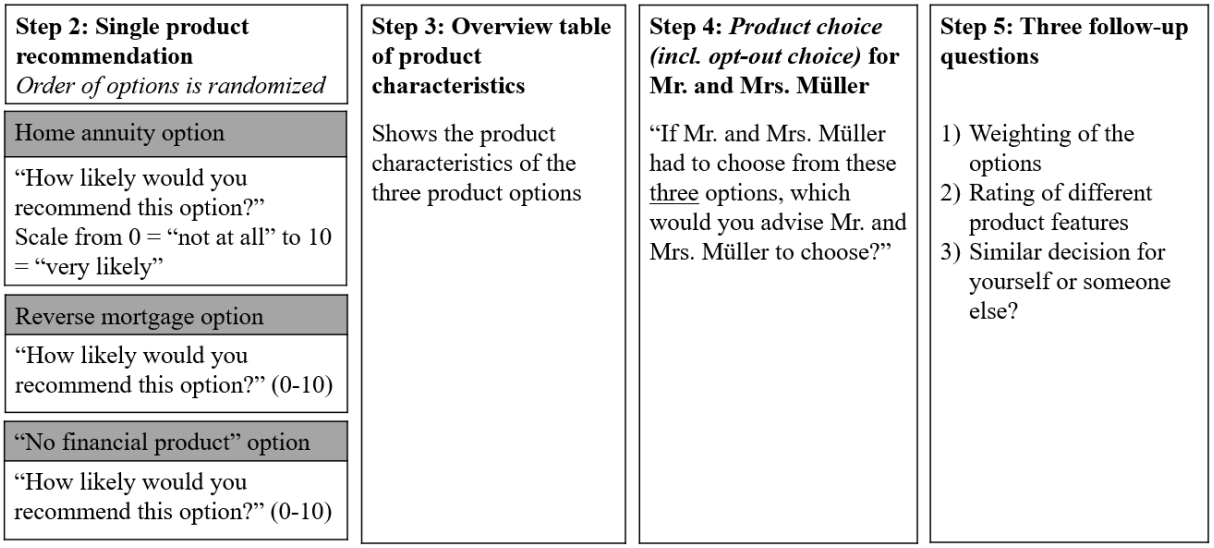
Figure 2, Panel A shows the procedure for the control group (N=1,285). In the simultaneous presentation, participants are introduced to all three product options one after the other and are asked for their "single product recommendations" (Step 2). When participants are asked which product option they would advise the couple to choose, all three options are available right away (Step 4). We label this the "product choice including the opt-out choice".

Figure 2, Panel B shows the procedure for the treatment group (N=1,369). In the sequential presentation, participants are first introduced to the two home equity release product options one after the other and are asked for their "single product recommendations" (Step 2a). Then, participants make their "product choice" between the home annuity option and the reverse mortgage option in the vignette setting (Step 4a). Only afterwards, the "no financial product" option is introduced and participants are asked for their "single product recommendation" (Step 2b). Then, participants are allowed to reconsider their product choice and potentially opt out by switching to the "no financial product" option (Step 4b, "opt-out choice"). The treatment group therefore goes through Steps 2 to 5 twice during the experiment.

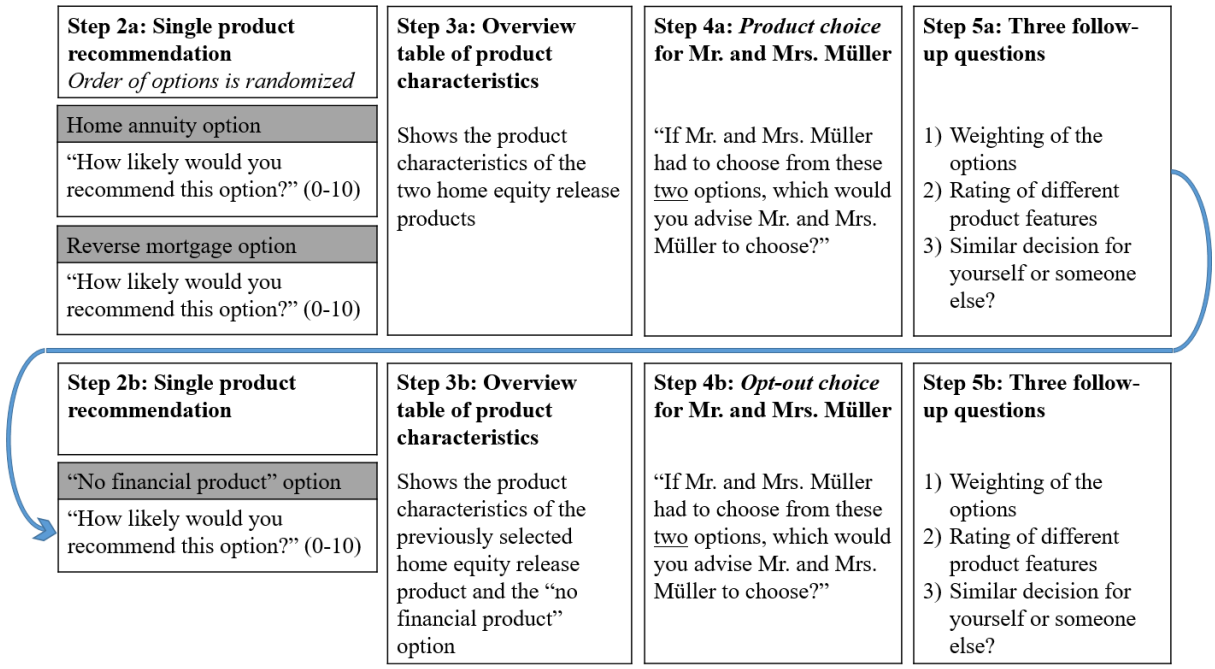
[11] For a few variables, we find statistically significant differences in means between the treatment and the control group. However, the economic magnitude of these differences is very small.

Figure 2: Presentation treatment

Panel A: Control group receives simultaneous presentation (N=1,285)



Panel B: Treatment group receives sequential presentation (N=1,369)



Notes: Figure 2 visualizes the presentation treatment for the control group (Panel A) and the treatment group (Panel B). In the control group, the opt-out choice "no financial product" is directly available. In the treatment group, however, participants are first introduced to the two home equity release products and only later to the "no financial product" option. Data is weighted.

3.3. Hypotheses

With our experimental design, we test three main hypotheses.

The product choice in the treatment group allows us to analyze which of the two home equity release options – the reverse mortgage or the home annuity – is preferred. Hanewald *et al.* (2016) model the optimal choice between reverse mortgages and home reversion plans and find that reverse mortgages are more beneficial for retired homeowners, primarily due to their asymmetric payout profiles and the protection against decreasing house prices. While the related empirical evidence is mixed (e.g., Bartsch *et al.*, 2021; OECD, 2024), we test the following hypothesis based on the existing theory:

H1: *The home annuity option is chosen less often than the reverse mortgage product.*

When pooling the product choice (including opt-out choice) in the control group and the opt-out choice in the treatment group together, we can compare the home equity release products to the "no financial product" option. Given the limited size of equity release markets in Germany and worldwide (e.g., Alai *et al.*, 2014; Bartsch *et al.*, 2021; OECD, 2024) and the inherent complexity of these products (Bartsch *et al.*, 2021), we expect:

H2: *Among the three options, the "no financial product" alternative is chosen most frequently.*

The presentation treatment allows us to investigate whether the way the options are introduced influences equity release decisions. Prior research demonstrates that information presentation affects individual decision-making (e.g., Saez, 2009), and that decision inertia can arise once individuals commit to an option (e.g., Madrian and Shea, 2001; Sautua, 2017). In complex settings, individuals may also rely on defaults or familiar choices when faced with cognitive effort (Agnew and Szykman, 2005; Brown *et al.*, 2016). This applies in particular to individuals with low levels of financial literacy. We therefore hypothesize:

H3: *The overall choice rate for equity release products is higher in the in the sequential presentation (treatment) group than in the simultaneous presentation (control) group.*

4. Do participants understand the experiment and take it seriously?

Given the complexity of our experimental setting and the fact that home equity release products are mostly unknown among the German population, our aim was to write the instructions and explanatory texts accompanying our experiment as comprehensively and easily to follow as possible. In the following, we report the results from several checks to verify that the participants understand the products, take the experiment seriously, and make sound decisions.

After having completed the choice for Mr. and Mrs. Müller, we ask participants a follow-up question on the simplicity of the decision task: "How easy was it for you to weigh up the options? Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy". Figure B1, Panel A in Appendix B shows the results for the control group where participants see all three product options simultaneously. Overall, participants seem to have no difficulty weighing up the options, with 43.8% stating that they find it rather easy. Interestingly, those who choose the "no financial product" option find the weighing up the easiest as 52.6% indicates a score between 7 and 10. In contrast, those choosing the home annuity option report the largest difficulties in making this choice (35.5%) while the majority of those choosing the reverse mortgage option is rather neutral (51.0%).

In the treatment group, the participants are asked about the simplicity of weighing up the options after both the product choice (Figure B1, Panel B in Appendix B) and the opt-out choice (Figure B1, Panel C in Appendix B). Overall, participants find it much more challenging to weigh up the two home equity release products against each other than comparing their chosen home equity release product to the "no financial product" option. These findings reflect that the majority of participants switch from their chosen home equity release product to the "no financial product" option in the opt-out choice as the "no financial product" option is much less complex than the home equity release products.

We then ask participants to rate the respective importance of different product features in their decisions during the experiment: "Please rate how important you consider the following aspects in your decision. Please rate using the scale from 0 to 10, where "0" means not important at all and "10" means very important". Eight product features are listed as follows: 1) The couple remains owner of the property. 2) The couple remains debt-free. 3) The couple can leave an inheritance. 4) Care costs can be financed.

5) Retirement income is enhanced. 6) Trust in the provider. 7) If the couple dies early, the heirs receive nothing. 8) The comprehensibility of the financial products.

While care costs (No. 4), increase of retirement income (No. 5), trust in provider (No. 6), and product comprehensibility (No. 8) concern home equity release products in general, two aspects each are directly related to the home annuity (No. 2 and 7) and the reverse mortgage option (No. 1 and 3). Only with the home annuity option, the couple remains debt-free (No. 2) because they sell the house to the home annuity provider instead of taking out a mortgage on the home as is the case in the reverse mortgage option. Moreover, in the home annuity option, it is specified that there is no inheritance in case of a premature death of the couple (No. 7). In the reverse mortgage option, however, the couple remains the owner of the property (No. 1). Also, the heirs have the right to repay the mortgage amount to the bank and keep the house when Mr. and Mrs. Müller die. Hence, only in the reverse mortgage option the couple can leave an inheritance (No. 3).

Figure B2 in Appendix B shows the mean product feature ratings for the full sample conditioning on the final product choice (i.e., after taking into account the "no financial product" option). Here, an interesting picture emerges confirming that the participants by and large understand the products. For feature No. 1 – that the couple remains the owner of the property – which is a characteristic of the reverse mortgage option, we observe that participants who choose the reverse mortgage option find this feature more important compared to those who pick the home annuity option. The same holds true for the feature No. 3 – the couple can leave an inheritance. The reverse pattern can be observed for feature No. 2 – the couple remains debt-free – which is a characteristic of the home annuity option. Participants who choose the home annuity for the couple consider this feature more important than those who choose the reverse mortgage option. Overall, this feature is the most important one to the participants (mean of 8.5). In contrast, the product feature "no inheritance in case of premature death" (No. 7) is the least important attribute. In accordance with the characteristics of the home annuity, participants who choose the home annuity option find this feature even less important than those choosing the reverse mortgage.

Moreover, general product features such as "financing of care expenses" (No. 4) and the "comprehensibility of financial product" (No. 8) seem to be crucial irrespective of the final choice.

Interestingly, “increasing retirement income” (No. 5) is equally important for those who choose one of the two home equity release products, while it does not play an important role for those choosing the “no financial product” option. In the latter option, indeed no additional income is generated. Hence, this answer pattern is consistent. A similar, even though less pronounced, pattern can be observed for the feature “trust in provider” (No. 6).

In real life, the vast majority of participants do not have any experience with home equity release products. Figure B3, Panel A in Appendix B shows that 88.8% of participants have never made such a decision or advised someone on such a decision before our experiment. Furthermore, the survey includes a question on home equity release products outside the experiment in the question section targeted at homeowners. Figure B3, Panel B in Appendix B shows that the majority of homeowners do not have a reverse mortgage or real estate annuity and 62.9% of homeowners have not even heard of home equity release products.[12]

On average, participants in the control group take 3 minutes and 16 seconds to the complete the experiment.[13] Participants in the treatment group need a little longer because their part contains more questions due to the sequential structure. On average, they take 3 minutes and 53 seconds. There is no indication of speeders. Furthermore, overall drop-out rates are very low. In the control group are no missing values – all 1,285 participants indicate a product choice (incl. opt-out choice). In the treatment group, however, 31 participants do not specify a product choice and choose “not specified” corresponding to 2.2% of the treatment group sample (N=1,369). This highlights once more that the choice between the home annuity and the reverse mortgage is demanding and not everyone is willing to put effort in this decision. 24 participants choose “not specified” in the opt-out choice, corresponding to 1.7% of the treatment group sample.

Overall, we conclude that participants, on average, make a cognitive effort to think about the options before making a final product choice for the elderly couple and seem to understand the product-specific

[12] Still, 2% of the participants claim that they own a home equity release product. This corresponds to N=23 respondents. Given the very low take-up rate and the few suppliers of such products in Germany at the time of our experiment, this number is still too high. Further analyses of this subgroup show that most of the respondents potentially gave an incorrect answer. For example, the minimum age for a reverse mortgage is usually 70 years. However, the majority of the 23 respondents is younger and, hence, not eligible for a reverse mortgage.
[13] On average, respondents take 34 minutes to complete the full survey.

features and act accordingly. Nevertheless, we cannot fully rule out that some participants may struggle with the details of the home equity release products and give inconsistent answers.

5. Is the home equity release decision determined by the presentation of the offer?

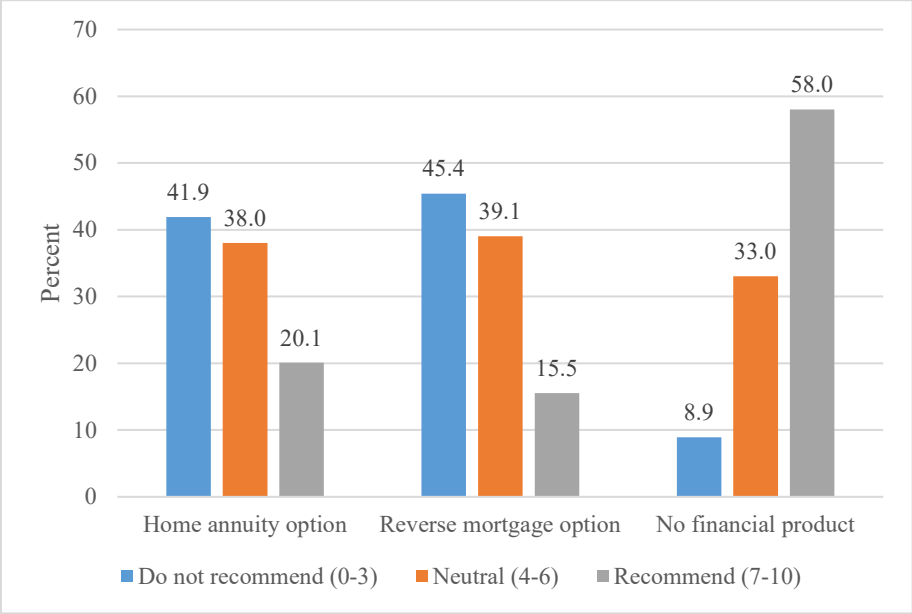
5.1. Single product recommendations

In this section, we pursue the question whether the home equity release decision is determined by the presentation of the offered products. In the first step of our analysis, we provide descriptive results for the single product recommendations. Recall that each of the product options is introduced independently one after the other during the experiment (see Figure 2, Step 2 for the control group and Steps 2a and 2b for the treatment group). Figure 3, Panel A shows the results for the control group, where the participants are directly introduced to both the two home equity release products and the "no financial product" option. After the presentation of each of these options, the participants are asked "How likely would you recommend this option?" so that these recommendations are not explicitly made for Mr. and Mrs. Müller but framed in a general way. The original answer is defined on a Likert scale from 0 "not at all recommend" to 10 "very likely to recommend". We define the following dummy: "Do not recommend" for answers 0 to 3, "Neutral" for answers 4 to 6, and "Recommend" for answers 7 to10. We find that participants are rather hesitant to recommend the two home equity release products in general. 41.9% and 45.4% would not recommend the home annuity option and the reverse mortgage option, respectively. At the same time, 20.1% would recommend the home annuity and 15.5% the reverse mortgage option. The "no financial product" option is the most popular alternative. More than half of the participants (58.0%) would recommend this option in general. 33.0% are neutral with regard to the "no financial product" option and only 8.9% would not recommend it.

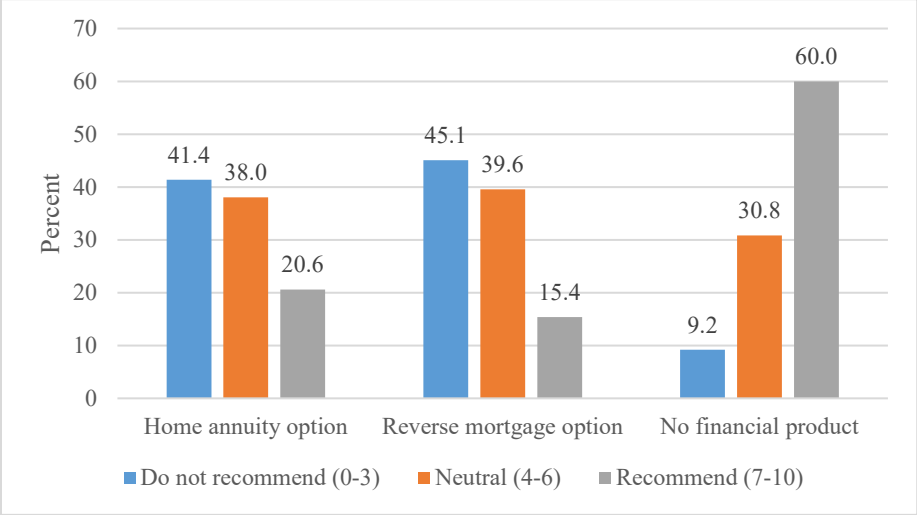
Since each option is rated individually in the single product recommendation, a clean ranking might not always be possible. Figure B6 in Appendix B contains a plausibility check of participants' rankings.

Figure 3: Single product recommendation

Panel A: Simultaneous presentation



Panel B: Sequential presentation



Notes: Figure 3 shows the results for the single product recommendations of the three options in the simultaneous presentation (control group in Panel A, N=1,285) and the sequential presentation (treatment group in Panel B, N=1,369). We exclude individuals who do not give a single product recommendation, which is the case for a small number of participants in the treatment group (N=7 for the home annuity option, N=10 for the reverse mortgage option, and N=14 for the "no financial product" option). The question posed after each option is introduced reads: "How likely would you recommend this option?". Answering is possible on a scale from 0 meaning "not at all recommend" to 10 meaning "very likely to recommend". In the figure, the scale is condensed to three groups: "Do not recommend (0-3), "Neutral (4-6)", and "Recommend" (7-10). Data is weighted.

Figure B6, Panel A shows the ratings for participants in the sequential treatment group when first recommending the two home equity release products (Step 2a). While 32.7% rank the home annuity

higher than the reverse mortgage option and 27.7% rank the reverse mortgage option higher than the home annuity, the majority (39.7%) is indifferent between the two. This mirrors the difficulty of the recommendation decision. Figure B6, Panel B contains the ranking of the recommendation for all three options by presentation treatment. For the majority of the participants (58.2% in the simultaneous presentation and 60.2% in the sequential presentation), the "no financial product" option is the most recommended one. Only 12.4% (11.7%) and 9.5% (6.8%) of the participants in the simultaneous (sequential) presentation treatment rank the home annuity option and the reverse mortgage option the highest, respectively. For around 20% of the sample, a clean ranking is not possible. 9.5% (9%) of the participants in the simultaneous (sequential) presentation treatment give the same rating to all three options. Figure B6, Panel C shows the single product recommendation for those N=246 participants who were indifferent between the three options. While the majority of the participants indicated a "5" for all three options, 18.2% (17.7%) indicated a "0 – not at all recommend". Our results are qualitatively the same when excluding the N=246 participants indifferent between all three options from the analyses.[14]

Figure 3, Panel B shows the single product recommendations for the treatment group. Here, the participants are asked whether they would generally recommend the two home equity release products in the first round of the experiment. In the second round, the "no financial product" option is introduced and the participants are asked for their general recommendation ("How likely would you recommend this option?"). We find almost identical results in the treatment group and the control group. Reassuringly, due to the randomization into the presentation treatment, the preferences for the three options do not systematically differ between the two groups.

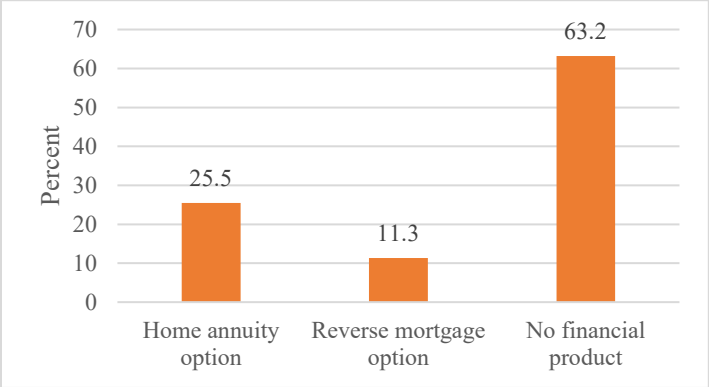
5.2. Final product choice

After being presented with an overview table of the available options (see Figure 1, Step 3 and Table 2 for details), participants have to make a choice for the elderly couple (see Figure 1, Step 4). Figure 4, Panel A shows that the final product choice in the simultaneous presentation (the control group) is in

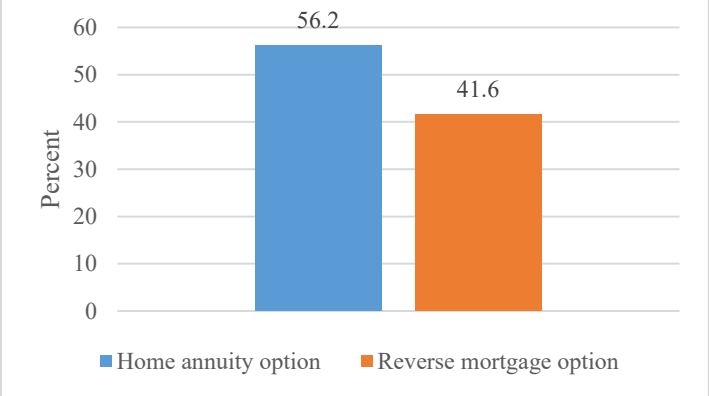
[14] Results are available upon request.

Figure 4: Product choice

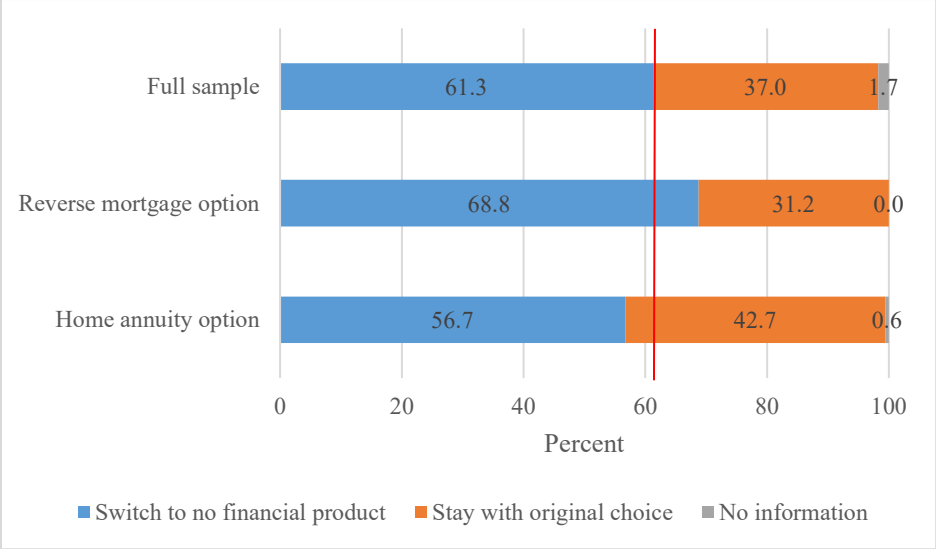
Panel A: Final product choice including opt-out choice – Simultaneous presentation



Panel B: Product choice – Sequential presentation



Panel C: Opt-out choice – Sequential presentation



Notes: Figure 4, Panel A shows the final product choice including opt-out choice in the simultaneous presentation (control group, N=1,285). Panel B shows the product choice in the sequential presentation (N=1,369). N=31 participants (2.2%) who did not specify an answer are excluded from the graph. Panel C shows the opt-out choice in the sequential presentation (N=1,369). Data is weighted.

line with the respective single product recommendations in the previous step (Figure 3, Panel A). Among the two home equity release products, the home annuity (25.5%) is chosen more often than the reverse mortgage (11.3%), and the "no financial product" option is by far the most popular. Almost two thirds (63.2%) would choose this option for Mr. and Mrs. Müller.

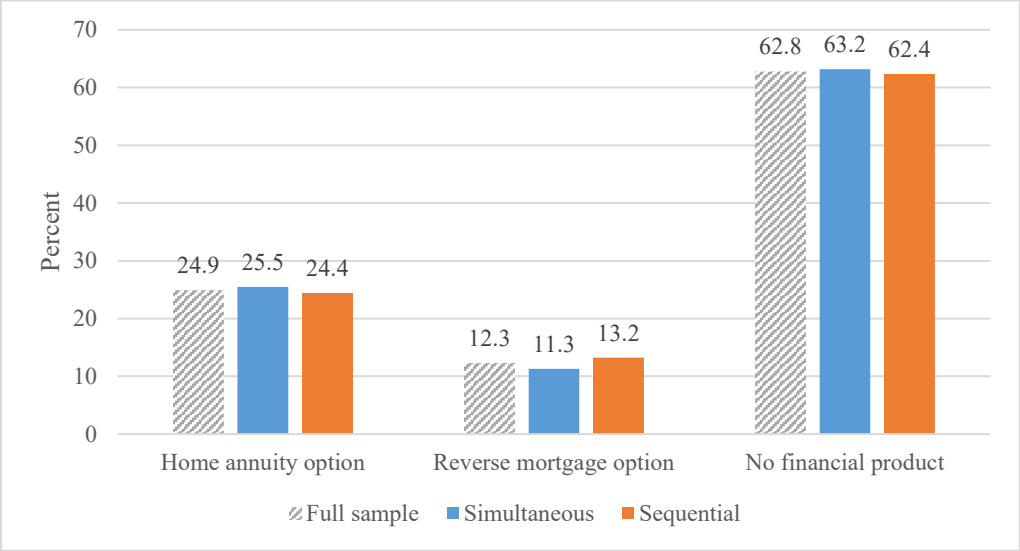
With regard to the product choice in the sequential presentation (treatment group), Figure 4, Panel B indicates that when being forced to directly compare the home annuity option to the reverse mortgage option (see Figure 2, Panel B, Step 4a), the participants prefer the home annuity option (56.2%) to the reverse mortgage option (41.6%).

In the sequential (treatment) group, the preferred home equity release product is then compared to the "no financial product" option (see Figure 2, Panel B, Step 4b). The results for the opt-out choice are shown in Figure 4, Panel C. When looking at the full sample of the treatment group, the majority of the participants (61.3%) choose to opt out of the home equity release option and opt for the "no financial product" option. In turn, only 37.0% stay with their original choice of home equity release product. A more diverse picture emerges, however, when conditioning on the product choice. Here, it becomes evident that participants who choose the reverse mortgage option first are more likely to opt out (68.8%) than those who choose the home annuity option first (56.7%).

Overall, the results from Figure 4 are not in favor of Hypothesis 1. While reverse mortgages are the superior product from a theoretical perspective and are the more popular product in the U.S., the U.K., Australia, and Canada, home reversions are more widespread in France, Germany, Italy, and Poland (e.g., Bartsch *et al.*, 2021; OECD, 2024). Furthermore, Bartsch *et al.* (2021) argue that home reversions are easier to understand than reverse mortgages. The results in Figure 4, however, confirm Hypothesis 2 that the "no financial product" option is the most popular. This finding may reflect the non-familiarity with and complexity of the financial products and the requested decision.

Figure 5 then provides first descriptive evidence on the influence of the presentation treatment on the final choice for Mr. and Mrs. Müller. For this purpose, we compare the final decisions between the control group, i.e. Step 4 in Figure 2, Panel A, and the treatment group (opt-out choice, i.e. Step 4b in Figure 2, Panel B).

Figure 5: Comparison of final choice by presentation treatment



Notes: Figure 5 displays the final choice for the full sample, the simultaneous presentation sample (N=1,285) and the sequential presentation sample (N=1,345). We exclude N=24 participants (0.9% of the full sample) who did not specify an answer in both the product choice and the opt-out choice in the treatment group. Data is weighted.

Starting with the full sample, around a quarter of participants choose the home annuity option (24.9%). The reverse mortgage option is the least preferred product (12.3%), while the majority of participants (62.8%) chooses "no financial product". Importantly, the demand for home equity release products seems to be independent of how the products are presented. The difference in the share of participants who choose the equity release products between the two representations is only around one to two percentage points (home annuity option: simultaneous 25.5% versus sequential 24.4%; reverse mortgage option: simultaneous 11.3% versus sequential 13.2%; "no financial product": simultaneous 63.2% versus sequential 62.4%). The results in Figure 5 do not support Hypothesis 3 that the offer determines which product is chosen for the elderly couple.

Next, we formally estimate the average treatment effect (ATE) of the presentation treatment on the final product choice in a multivariate setting. For this purpose, we estimate the following multinomial probit model[15]:

$$final\ product\ choice_i = \alpha + \beta\ sequential\ treatment\ dummy_i + \gamma X_i\ + \varepsilon_i, \quad (1)$$

[15] As a robustness check, we implement a multinomial logit model. The results are almost identical.

where subscript *i* stands for individual survey participant. The dependent variable *final product choice* can take on three values. It equals 0 if the participant chooses the "no financial product" option for Mr. and Mrs. Müller during the final product choice, 1 for the home annuity option, and 2 for the reverse mortgage option. The *sequential treatment dummy* equals 1 if the participant was asked to choose the products in a sequential order (treatment group) and 0 if the participant was presented all three options simultaneously (control group).

Even though we work with an example of an elderly couple in the experiment, not all characteristics are specified explicitly to keep the level of detail manageable for participants and to focus their attention on the various contract features of the different equity release products. Hence, there is still scope for individual projections when actually making choices for Mr. and Mrs. Müller. *X* therefore is a vector of control variables that includes respondent characteristics. First, it includes the demographics characteristics *Female* dummy, *Age (in years)*, and household income (*HH monthly disposable income*).

Second, it includes control variables that have been shown to be relevant determinants of people's interest in home equity release products in the related literature: risk tolerance, possessing other liquid assets, financial literacy, homeownership status, having a bequest motive, the estimated future health status, having a private supplementary nursing care insurance, and trust in financial institutions[16] (e.g., Fornero *et al.*, 2016; Davidoff *et al.*, 2017; Dillingh *et al.*, 2017; Hanewald *et al.*, 2020; Choinière-Crèvecoeur and Michaud, 2023). Thus, *Risk tolerance (1-10)* captures participants' willingness to take risks in general on a scale from "0" meaning "Not willing to take risks at all" to 10 meaning "Very willing to take risks". *Stocks, equity funds, property funds (dummy)* is a dummy that equals 1 if participants own stocks, equity funds, or property funds in December 2019, 0 otherwise. We measure financial literacy using three standard questions on compound interest, inflation, risk diversification – also known as the "Big Three" – and two questions on debt.[17] The *Financial literacy score (0-5)* counts the number of correct answers to these five financial literacy questions. *Homeownership (dummy)* equals

[16] All the control variables with the exception of financial literacy are surveyed before the experiment. This rules out any influence of the intervention on these measures.

[17] For more details on the "Big Three" questions, see Lusardi and Mitchell (2011). For details on the two debt questions, see Lusardi and Tufano (2015). The exact wording of all five financial literacy questions can be found in Table C1 in Appendix C.

0 if the participant is a tenant, 1 if he or she is a homeowner. *Bequest motive (dummy)* captures whether the participant plans to leave a bequest (Yes/ No). *Estimated future health (0-10)* measures how participants expect their own health situation to develop in the future on a scale from 0 meaning "very negative" to 10 meaning "very positive". *Private supplementary nursing care insurance (dummy)* equals 1 if participants own a private supplementary nursing care insurance, 0 otherwise.[18] *Trust in financial institutions (0-10)* refers to the question "How much do you agree with this statement? In general, banks and financial institutions in Germany can be trusted." (Scale from 0 meaning "Do not agree at all" to 10 meaning "Completely agree"). ε is the error term.

We expect β to be significant and positive as we expect the sequential presentation of the products to make the choice of a home equity release product more likely than in the simultaneous presentation of products where participants can opt out, i.e. choose the "no financial product" option, immediately (Hypothesis 3).

The regression results are displayed in Table 3. In each of the columns, we present the results from one multinomial probit model with different final product choices as the baseline. In Columns 1 and 2, the "no financial product" option serves as the baseline and is compared to the home annuity and the reverse mortgage option. In Columns 3 and 4, the home annuity option is the baseline and, in Columns 5 and 6, the reverse mortgage option is defined as the baseline, while the other options form the respective comparison groups.

Columns 1, 3, and 5 present the treatment effects without further control variables.[19] They show that none of the treatment effects is statistically significant.[20] Thus, the presentation treatment does not have a significant influence on the final product choice. When including controls in Columns 2, 4, and 6, the

[18] The answer options are 1 = Yes, without state subsidy, 2 = Yes, with state subsidy, 3 = Yes, but I don't know whether with or without a supplement, and 4 = No, I don't have private supplementary long-term care insurance. We define a dummy that equals 1 (=Yes) if the participants indicated 1-3, and 0 (=No) if their answer was 4. We find, however, that participants seem to overestimate their insurance coverage.

[19] We base these regressions on the same samples as those including control variables because some observations have missing controls and thus drop out of the estimation sample. However, when we use the larger full samples for the analyses without control variables results are unchanged.

[20] Additional Wald chi2 tests show that the coefficients of the two respective alternatives are not significantly different from one another (Wald chi2 (2) = 1.61; Prob > chi2 = 0.4468).

Table 3: Multinomial probit regression results for the final product choice

Table 3 shows average marginal effects (ATE) from multinomial probit regressions with the final product choice for Mr. and Mrs. Müller as dependent variable. In Columns 1 and 2, the "no financial product" option serves as the baseline. In Columns 3 and 4, the home annuity option serves as a baseline, while in Columns 5 and 6 the reverse mortgage option is defined as the baseline. All regressions also contain a dummy that indicates whether participants have taken part in the financial literacy experiment that was included in our survey (results not shown). All variables are defined in Table C1 in Appendix C. Standard errors are shown in parentheses. Significance levels are indicated as *** p<0.01, ** p<0.05, * p<0.1. Using the full sample of N=2,642 in Columns 1, 3, and 5 does not change the results.

Dependent variable: Final product choice for Mr. and Mrs. Müller

	(1)	(2)	(3)	(4)	(5)	(6)
Baseline	No financial product	No financial product	Home annuity	Home annuity	Reverse mortgage	Reverse mortgage
VARIABLES						
Sequential treatment dummy	0.015	0.026	-0.023	-0.033*	0.008	0.007
	(0.021)	(0.020)	(0.018)	(0.018)	(0.014)	(0.014)
Female		0.017		-0.004		-0.013
		(0.021)		(0.019)		(0.015)
Age (in years)		-0.001		0.001*		-0.000
		(0.001)		(0.001)		(0.001)
Reference category: HH monthly disposable income less than 1,500 Euro						
1,500 to less than 2,500 Euro		0.049*		-0.006		-0.043**
		(0.028)		(0.025)		(0.019)
2,500 to less than 3,500 Euro		0.053*		-0.043		-0.010
		(0.031)		(0.028)		(0.023)
3,500 Euro and more		0.079**		-0.066**		-0.014
		(0.033)		(0.029)		(0.024)
Risk tolerance (0-10)		-0.011***		0.004		0.007**
		(0.004)		(0.004)		(0.003)
Stocks, equity funds, property funds (dummy)		0.086***		-0.060***		-0.026
		(0.024)		(0.022)		(0.017)
Financial literacy score (0-5)		0.025***		-0.011		-0.015***
		(0.008)		(0.007)		(0.006)
Home ownership (dummy)		0.016		-0.054**		0.038**
		(0.024)		(0.021)		(0.017)
Bequest motive (dummy)		0.115***		-0.081***		-0.034**
		(0.023)		(0.020)		(0.016)
Estimated future health (0-10)		0.011**		-0.007*		-0.004
		(0.005)		(0.004)		(0.003)
Priv. supp. nursing care insurance (dummy)		-0.071***		0.028		0.043**
		(0.028)		(0.025)		(0.018)
Trust in financial institutions (0-10)		-0.002		-0.007*		0.009***
		(0.004)		(0.004)		(0.003)
Observations	2,210	2,210	2,210	2,210	2,210	2,210
Raw mean	62.2		24.7		12.2	
McFadden's R^2	0.0014	0.0481	0.0014	0.0481	0.0014	0.0481

estimates of the treatment effects stay statistically insignificant, only in Column 4 the estimate is marginally significant.[21] Here, participants who see the sequential presentation are less likely to recommend the home annuity option compared to the reverse mortgage or the "no financial product" option. However, overall, we can conclude that the demand for home equity release products is not systematically determined by the presentation of the offer and reject Hypothesis 3. Participants have a strong preference to opt-out independent of the way the options are presented. This is likely a reflection of the market situation in Germany.

6. What drives the demand for home equity release products?

In this section, we take a closer look at the control variables in Columns 2, 4, and 6 of Table 3 to better understand the potential drivers of the demand for home equity release products.

Regarding the socio-demographic characteristics, we find that women do not choose differently than men. *Age (in years)* only plays a significant role when participants choose the home annuity option compared to the reverse mortgage or the "no financial product" option, i.e., with an increase in age, participants seem more likely to choose a home annuity compared to the other options. Home equity release products may become more important with increasing age and the home annuity option may be the easier and more straightforward of the two presented products.[22] When studying the demand for reverse mortgages in China, Hanewald *et al.* (2020) find that older age is positively correlated with the likelihood of expressing interest for such a product. Furthermore, the results show that households with higher *HH monthly disposable income* are more likely to choose "no financial product" and are more hesitant to choose a home equity release product. Wealthier households are likely less dependent on additional income sources in old-age (Davidoff *et al.*, 2017).

We now turn to the further control variables that should be particularly relevant for the home equity release decision. Participants with a higher *Risk tolerance (0-10)* are more likely to choose the reverse

[21] Again, an additional chi2 tests show that the coefficients of the two respective alternatives are not significantly different from one another (chi2 (1) = 1.89; Prob > chi2 = 0.1687).

[22] As a robustness check, Table B3 replicates the regressions from Table 3 and includes a dummy for retirement (*Retired (dummy)*). The effect for *age (in years)* becomes more pronounced. Retirees are less likely to choose the home annuity and more likely to pick the "no financial product" option. The other coefficients remain unaffected.

mortgage option (compared to the home annuity option and the "no financial product" option) and less likely to choose "no financial product" (compared to the two home equity release products). This finding is in line with Eling *et al.* (2021) who study 14 European countries and find that risk tolerance is positively related to reverse mortgage demand, even though they study a setting with different insurance products. The same holds true for the U.S. (Davidoff *et al.*, 2017). In line with our findings for *HH monthly disposable income*, the results show that households with other assets (*Stocks, equity funds, property funds (dummy)*) are more likely to choose "no financial product" and are more hesitant to choose a home equity release product.

As the products are very complex, participants with lower financial literacy (*Financial literacy score (0-5)*) might have greater difficulty understanding the products and might therefore refrain from choosing the home equity release products. Interestingly, we rather find that participants with a lower financial literacy score are less likely to choose the "no financial product" option for Mr. and Mrs. Müller and are more likely to choose a home equity release product. This at first glance surprising result is in line with previous findings. Fornero *et al.* (2016), for instance, argue that more financially literate individuals are better at retirement planning (Lusardi and Mitchell, 2007; Fornero and Monticone, 2011) and, consequently, are already well-prepared and not in need of additional home equity release products. Thus, our findings highlight the need for providing careful information to households when they make this complex long-term decision. In particular, because we also find that participants with lower financial literacy find it more difficult to weigh up the options compared to those with high financial literacy.[23]

Furthermore, we find that homeowners are less likely to choose the home annuity option and are more likely to choose the reverse mortgage option compared to tenants (*Homeownership (dummy)*). This is consistent with the hypothesis that homeowners are emotionally attached to their homes and do not want to give up the homeownership status as would be the case with the home annuity option (Jones *et al.*, 2012). Participants are likely not able to abstract from this feeling in the hypothetical setting of our

[23] Figure B4 in Appendix B shows the overall assessment of the weighing of the options by financial literacy in the control group. Figure B5 in Appendix B depicts the descriptive results for the final choice by financial literacy. Here, the level of financial literacy is approximated by a dummy that equals 1 if the participant is able to answer the "Big Three" questions correctly, 0 otherwise. The "Big Three" questions contain three questions on interest, inflation, and risk diversification (Lusardi and Mitchell, 2011).

experiment. Similarly, participants with a bequest motive are more likely to choose "no financial product" and refrain from choosing a home equity release product for the elderly couple (*Bequest motive (dummy)*). This finding is in line with, for example, Davidoff *et al.* (2017) who analyze U.S. data and Hanewald *et al.* (2020) who analyze Chinese data. The negative effect is weaker for the reverse mortgage option, reflecting that ownership status and, thus, the possibility to leave the house as a bequest remains unchanged when taking out a reverse mortgage. However, the example of Mr. and Mrs. Müller intentionally did not specify whether the couple has children or would like to leave a bequest. Again, participants are likely not able to abstract from their feelings and preferences in the hypothetical setting of our experiment.

Better expected future health might enable people to stay in their homes longer and, in turn, postpone their need for nursing care (*Expected future health (0-10)*). Accordingly, people may be able to enjoy their lives in retirement longer, which could be topped up by liquidity from an equity release product. At the same time, the need for additional liquidity for financing nursing care at home is postponed and thus the need to take out an equity release product. Therefore, the effect of better expected future health is unclear ex ante. Our results show that respondents who assess their future health as better are more likely to choose "no financial product" for the elderly couple (compared to the two home equity release products). This finding is in contrast to Hanewald *et al*. (2020) who find that better health status is associated with a greater interest in reverse mortgages. Obviously, in our setting, additional income from the equity release products to be able to travel and have a comfortable retirement life is not considered desirable or is not known as a valid reason to take out an equity release product. If someone already owns a private supplementary nursing care insurance, the need to privately finance nursing costs should be lower (*Private supplementary nursing care insurance (dummy)*). Nevertheless, our results show that participants with a private supplementary nursing care insurance are less likely to choose "no financial product" for the elderly couple and more likely to choose the reverse mortgage option. However, our summary statistics indicate that the participants in our experiment seem to overestimate their coverage with such an insurance product. They may therefore not fully understand the insurance product and its relation to home equity release products. Finally, trust in financial institutions may be crucial, especially in the case of reverse mortgages, as the loan is offered by a bank (*Trust in financial institutions (0-10)*).

In line with this reasoning, we find that participants with higher trust in financial institution are more (less) likely to choose the reverse mortgage (home annuity) option. Analogously, Davidoff *et al.* (2017) find that trust in mortgage brokers is positively related to the intention to use a reverse mortgage.

To sum up, our analysis shows that higher risk tolerance, being a homeowner, and trusting in financial institutions are factors that drive the demand for home equity release products, for reverse mortgages in particular. At the same time, higher household disposable income, experience with stocks, higher financial literacy, wanting to leave a bequest, and positive expected future health are associated with a preference for the "no financial product" option and, thus, decrease the demand for equity release products.

Heterogeneity analysis by retirement status

As home equity release products are only available for elderly people with the purpose of increasing the availability of liquid funds from their illiquid assets during retirement, we re-estimate Equation (1) separately for the non-retired and retirees in our sample. The controls included in X_i are adjusted in one aspect: *HH monthly disposable income* is replaced by *Estimated net retirement income* for non-retired and *Net retirement income* for retirees. Table 4 shows the average treatment effects for non-retired (Columns 1-6) and retirees (Columns 7-12).

Interestingly, *Net retirement income* is only relevant for retirees, but not for non-retired. Intuitively, retirees with higher net retirement income are more likely to choose "no financial product" and less likely to choose a home annuity. In contrast, financial knowledge only matters in the subsample of non-retired (*Financial literacy score (0-5)*). Here, non-retired with higher levels of financial literacy are less likely to choose a home equity release product and more likely to choose "no financial product". In addition, non-retired and retirees seem to think differently about their homes (*Homeownership (dummy)*). Non-retired homeowners are more likely to choose the reverse mortgage option and less likely to choose the home annuity option compared to non-retired tenants. In contrast, retired homeowner are less likely to choose the home annuity and more likely to choose "no financial product".

Table 4: Multinomial probit regression results for the final product choice by retirement status

Table 4 shows average marginal effects (ATE) from multinomial probit regressions separately for non-retired (Columns 1-6) and retirees (Columns 7-12). In Columns 1, 2, 7, and 8, the "no financial product" option serves as the baseline. In Columns 3, 4, 9, and 10, the home annuity option serves as a baseline, while in Columns 5, 6, 11, and 12 the reverse mortgage option is defined as the baseline. All regressions also contain a dummy that indicates whether participants have taken part in the financial literacy experiment that was included in our survey (results not shown). All variables are defined in Table C1 in Appendix C. Standard errors are shown in parentheses. Significance levels are indicated as *** p<0.01, ** p<0.05, * p<0.1.

Dependent Variable: Final product choice for Mr. and Mrs. Müller												
	Non-retired						**Retirees**					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	No fin. product		Home annuity		Reverse mortgage		No fin. product		Home annuity		Reverse mortgage	
Sequential treatment dummy	0.008	0.027	-0.018	-0.034	0.010	0.007	-0.030	-0.013	0.002	-0.014	0.028	0.027
	(0.025)	(0.024)	(0.022)	(0.021)	(0.017)	(0.017)	(0.030)	(0.029)	(0.027)	(0.027)	(0.019)	(0.019)
Female		0.028		-0.000		-0.028		0.019		-0.018		-0.001
		(0.026)		(0.023)		(0.019)		(0.031)		(0.028)		(0.021)
Age (in years)		-0.003**		0.003***		-0.000		-0.004**		0.004***		-0.000
		(0.001)		(0.001)		(0.001)		(0.002)		(0.002)		(0.001)
(Estimated) net retirement income		-0.003		0.001		0.002		0.022***		-0.018***		-0.004
		(0.006)		(0.005)		(0.004)		(0.007)		(0.006)		(0.005)
Risk tolerance (0-10)		-0.012**		0.006		0.006		-0.013**		0.005		0.008**
		(0.005)		(0.004)		(0.004)		(0.006)		(0.005)		(0.004)
Stocks, equity funds, property funds (d)		0.093***		-0.065**		-0.028		0.099***		-0.050		-0.049*
		(0.029)		(0.026)		(0.021)		(0.037)		(0.035)		(0.025)
Financial literacy score (0-5)		0.034***		-0.019**		-0.015**		0.009		-0.004		-0.005
		(0.009)		(0.008)		(0.006)		(0.011)		(0.010)		(0.008)
FinLit experiment (dummy)		-0.039		0.009		0.030		0.033		-0.014		-0.020
		(0.028)		(0.025)		(0.020)		(0.038)		(0.035)		(0.026)
Homeownership (dummy)		0.003		-0.043*		0.039**		0.088**		-0.125***		0.038
		(0.027)		(0.024)		(0.019)		(0.037)		(0.033)		(0.025)
Bequest motive (dummy)		0.130***		-0.096***		-0.034*		0.091**		-0.060*		-0.032
		(0.026)		(0.023)		(0.019)		(0.037)		(0.033)		(0.025)
Estimated future health (0-10)		0.017***		-0.015***		-0.002		0.004		0.001		-0.006
		(0.006)		(0.005)		(0.004)		(0.006)		(0.006)		(0.004)
Priv. supp. nursing care insurance (d)		-0.088***		0.047		0.041*		-0.086**		0.043		0.043
		(0.032)		(0.028)		(0.022)		(0.042)		(0.039)		(0.027)
Trust in financial institutions (0-10)		-0.001		-0.008*		0.009**		-0.001		-0.009*		0.011***
		(0.005)		(0.004)		(0.003)		(0.006)		(0.005)		(0.004)
Observations	1,588	1,588	1,588	1,588	1,588	1,588	1,002	1,002	1,002	1,002	1,002	1,002

This might reflect that individuals grow more and more attached to their home over their life span. Furthermore, while the *Estimated future health (0-10)* is not relevant for the final product decision of retirees, it plays a significant role for the non-retired. The non-retired who expect better health are less likely to opt for a home annuity and more likely to choose "no financial product" reflecting their expectation that they will be able to continue living in their own homes without taking further action.

7. Conclusion

For most households, housing wealth represents their largest asset, making decisions about how to decumulate this illiquid form of wealth a central aspect of retirement planning. Several products allow homeowners to access home equity while continuing to live in their property. The two most prominent options at the time of our experiment were the home annuity and the reverse mortgage. In Germany, the market for such products remains small, and corresponding real-life decisions are rarely observable.

To better understand how households evaluate these choices, we conducted an online vignette experiment in Germany. Participants advised a retired couple living in their debt-free home on how to handle their home equity, choosing among a home annuity, a reverse mortgage, and a "no financial product" option, presented either simultaneously or sequentially. This design allows to analyze both product preferences and the role of presentation format.

Our findings are threefold. First, among the two home equity release products, participants prefer the home annuity to the reverse mortgage, suggesting that the former appears more appealing or easier to understand. Second, the "no financial product" option is the most popular overall. Third, the home equity release decision is not driven by the presentation format. Rather, individual characteristics such as higher risk tolerance, being a homeowner oneself, and higher trust in financial institutions drive the demand for home equity release products. Conversely, higher disposable income, experience with stocks, higher financial literacy, stronger bequest motives, and better expected future health decrease the demand for equity release products.

These results contribute to the policy debate on fostering effective and consumer-oriented equity release markets in Germany. Given the limited market penetration, our findings highlight the importance of

clear product standards, sound advice, and regulatory oversight. The fact that individuals with lower financial literacy are more likely to recommend equity release products underscores the need for a legal and regulatory framework as well as for targeted financial education to support informed financial decisions in later life.

As the German equity release market continues to evolve, future research should investigate the broader range of products that have emerged. Extending this analysis to new market conditions will help policymakers and providers design instruments that enable retirees to draw on housing wealth safely and efficiently as part of sustainable old-age provision.

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Appendix A: The experiment

A.1. Survey design and questionnaire

Step 1: Introduction (Full sample)

In the following, we would like to know how you assess certain options for using real estate for retirement planning. To this end, we describe various alternatives and are interested in your opinion. Which recommendation would you make in the end?

Mr. and Mrs. Müller currently live in their own house. They are 70 years old, both are retired and healthy for their age. The value of their home is 339,000 Euro and was recently determined by an independent appraiser. The house is debt-free. Together, the two receive a monthly pension income of 2,500 Euro after taxes, which helps them make ends meet well in everyday life.

Now the two are considering how to deal with the house in old age and are faced with the following alternatives:

Control group: Simultaneous presentation (50% of sample, online participants, no pen & paper)

Step 2: Single product recommendation - Presentation of each option individually

One screen per option followed by a question. Order of options is randomized.

Home annuity option:
With a **real estate annuity**, they can release the financial wealth tied up in their home to supplement their monthly retirement income and raise their standard of living accordingly. The real estate annuity allows turning a property into money without the necessity to move out.

- Mr. and Mrs. Müller sell the house to the home annuity option provider, who cannot resell the house before they die.
- They retain a lifelong right of residence.
- The monthly annuity payment and the lifelong right of residence are anchored in the first rank in the land register.
- The Müllers receive a monthly pension of 388 Euro from the annuity provider for the rest of their lives.
- The annuity provider takes over the necessary maintenance of the house and ensures this through regular expert visits.
- If Mr. and Mrs. Müller need to go into a nursing home, they can rent out the house and the rental income can be used to cover the nursing home costs.
- The minimum term of the monthly payments is 5 years. This means that if Mr. and Mrs. Müller die early, their heirs will receive the monthly pension payment for up to 5 years. If Mr. and Mrs. Müller live longer than 5 years, the heirs receive nothing.

Question 1	How likely would you recommend this option?	Scale from 0 “not at all recommend” to 10 “very likely to recommend”

Reverse mortgage option:
Mr. and Mrs. Miller can take out a **reverse mortgage** to release the financial wealth tied up in their home. The reverse mortgage allows them to cash out their property value without having to move out.

- The house remains the property of Mr. and Mrs. Müller. The couple takes care of the maintenance.

• They both take out a mortgage with the bank. The interest rate remains the same for the entire term. • A land charge is included in the land register as the security for the bank. • From the Reverse Mortgage they receive a monthly annuity of 388 Euro. At the same time, part of the mortgage is paid into an annuity insurance policy, which takes over the monthly annuity payment when the loan is exhausted. As a result, the monthly pension of 388 Euro is guaranteed for life. • The end of the contract term is reached either upon death or upon moving out from the property. • At the end of the contract term, the mortgage amount (monthly annuity plus interest) is repaid. It is covered by the value of the property. • If the mortgage amount at the end of the contract term is higher than the revenue from the sale of the property, residual debt insurance covers the difference. The contract for the residual debt insurance is concluded together with the contract for the reverse mortgage. If the mortgage amount at the end of the contract term is less than the assets from the sale of the house, the couple or their heirs receive the surplus. Mr. and Mrs. Müller and their heirs are therefore protected from indebtedness or additional payments. • The heirs also have the right to repay the mortgage amount to the bank and keep the house after Mr. and Mrs. Müller's death. • If Mr. and Mrs. Müller move into a nursing home, the house can be sold. If the value of the house exceeds the mortgage amount, the nursing home can be paid from the surplus.		
Question 2	How likely would you recommend this option?	Scale from 0 "not at all recommend" to 10 "very likely to recommend"

"No financial product" option: Mr. and Mrs. Müller remain living in the house and do nothing else. • This means that they do not draw any additional pension income from their property. They finance the necessary maintenance from their pension income. • The house passes unencumbered to their heirs upon their death. • If Mr. and Mrs. Müller have to go into a nursing home, they can rent out or sell the house and the rental income or the proceeds from the sale can be used to cover the nursing home costs.		
Question 3	How likely would you recommend this option?	Scale from 0 "not at all recommend" to 10 "very likely to recommend"

Step 3 and 4: Overview table and product choice including opt-out choice

Question 4	If Mr. and Mrs. Müller had to choose from these three options, which would you advise Mr. and Mrs. Müller to choose?

The three options next to each other in the order as before in Step 2.

	Home annuity option	**Reverse mortgage option**	**"No financial product" option**
Owner of the property	Home annuity provider	Müller Family but burdened by loan	Müller Family
Housing tenure	For life	For life	For life
Repair	Through home annuity provider	By Mr. and Mrs. Müller	By Mr. and Mrs. Müller
Monthly pension	388 Euro	388 Euro	0
Payment financing	Through home annuity provider	Through bank loan	-

Option in case of care	Renting is possible	Renting is excluded, sale of the house is possible	Rental or sale possible
Owner after death	Home annuity provider	Heirs, but with a loan burden, heirs can repay the loan amount drawn down to the bank and thus keep the house.	Heirs
	□ Home annuity option	□ Reverse mortgage option	□ "No financial product" option

Step 5: Follow-up questions

Question 5	How easy was it for you to weigh the options? *Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy.*	0 – Very difficult … 10 – Very easy
Question 6	Please rate how important you think the following aspects are in your decision? *Please rate using the scale from 0 to 10.* *Where "0" means not important at all and "10" means very important.*	- The couple remains owner of the property. - The couple remains debt-free. - The couple can leave an inheritance. - Care costs can be financed. - Retirement income is enhanced. - Trust in the provider. - If the couple dies early, the heirs receive nothing. - The comprehensibility of the financial products.
Question 7	Have you ever made a similar decision yourself or advised someone (e.g., your parents or grandparents) on such a decision before?	□ Yes □ No

Treatment group: Sequential presentation (50% of sample, online and 100% pen and paper)

Note for P&P: The options are not randomized, sequential presentation (1st reverse mortgage/2nd Home annuity).

Step 2a: Single product recommendation - Presentation of each option individually

Same as simultaneous presentation, but initially only home annuity option and reverse mortgage option are shown and compared. The order of the two options is randomized. Then the "no financial product" option is compared to the previously selected option.

One screen per option followed by a question.

<u>Home annuity option:</u>

[Text same as in Step 2]

Question 8	How likely would you recommend this option?	Scale from 0 “not at all recommend” to 10 “very likely to recommend”

Reverse mortgage option:

[Text same as in Step 2]

Question 9	How likely would you recommend this option?	Scale from 0 “not at all recommend” to 10 “very likely to recommend”

Step 3a and 4a: Overview table and product choice

Question 10	If Mr. and Mrs. Müller had to choose from these two options, which would you advise Mr. and Mrs. Müller to choose?

The two options next to each other in the order as before in Step 3.

	Home annuity option	**Reverse mortgage option**
Owner of the property	Home annuity provider	Müller Family but burdened by loan
Housing tenure	For life	For life
Repair	Through home annuity provider	By Mr. and Mrs. Müller
Monthly pension	388 Euro	388 Euro
Payment financing	Through home annuity provider	Through bank loan
Option in case of care	Renting is possible	Renting is excluded, sale of the house is possible
Owner after death	Home annuity provider	Heirs, but with a loan burden, heirs can repay the loan amount drawn down to the bank and thus keep the house.
	□ Home annuity option	□ Reverse mortgage option

Step 5a: Follow-up questions

Question 11	How easy was it for you to weigh the options? *Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy.*	0 – Very difficult … 10 – Very easy
Question 12	Please rate how important you think the following aspects are in your decision? *Please rate using the scale from 0 to 10.* *Where "0" means not important at all and "10" means very important.*	- The couple remains owner of the property. - The couple remains debt-free. - The couple can leave an inheritance. - Care costs can be financed. - Retirement income is enhanced. - Trust in the provider. - If the couple dies early, the heirs receive nothing. - The comprehensibility of the financial products.

Step 2b: Single product recommendation

"No financial product" option:

[Text same as in Step 2]

Question 13	How likely would you recommend this option?	Scale from 0 "not at all recommend" to 10 "very likely to recommend"

Step 3b and 4b: Overview table and opt-out choice

Additional option "No financial product" vs. previously selected product choice.

Question 14 P&P	If Mr. and Mrs. Müller had to choose from these two options, which would you advise Mr. and Mrs. Müller to choose?	☐ Previously chosen option ☐ "No financial product" option
ONLINE	If Mr. and Mrs. Müller had to choose from these two options, which would you advise Mr. and Mrs. Müller to choose?	

An overview table includes "no financial product" option and product chosen in question 10.

	Home annuity option	**Reverse mortgage option**	**„No financial product" option**
Owner of the property	Home annuity provider	Müller Family but burdened by loan	Müller Family
Housing tenure	For life	For life	For life
Repair	Through home annuity provider	By Mr. and Mrs. Müller	By Mr. and Mrs. Müller
Monthly pension	388 Euro	388 Euro	0
Payment financing	Through home annuity provider	Through bank loan	-
Option in case of care	Renting is possible	Renting is excluded, sale of the house is possible	Rental or sale possible
Owner after death	Home annuity provider	Heirs, but with a loan burden, heirs can repay the loan amount drawn down to the bank and thus keep the house.	Heirs
	☐ Home annuity option	☐ Reverse mortgage option	☐ "No financial product" option

Step 5b: Follow-up questions

Question 15	How easy was it for you to weigh the options? *Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy.*	0 – Very difficult … 10 – Very easy
Question 16	Please rate how important you think the following aspects are in your decision? *Please rate using the scale from 0 to 10.*	- The couple remains owner of the property. - The couple remains debt-free.

	Where "0" means not important at all and "10" means very important.	- The couple can leave an inheritance. - Care costs can be financed. - Retirement income is enhanced. - Trust in the provider. - If the couple dies early, the heirs receive nothing. - The comprehensibility of the financial products.
Question 17	Have you ever made a similar decision yourself or advised someone (e.g., your parents or grandparents) on such a decision before?	□ Yes □ No

A.2. Example of screenshots

Section A.2 contains two screenshots of the experiment in the sequential presentation (treatment group) in German. Panel A shows an example of a product choice between the reverse mortgage option and the home annuity option. Panel B shows an example of an opt-out choice between the reverse mortgage option and "no financial product".

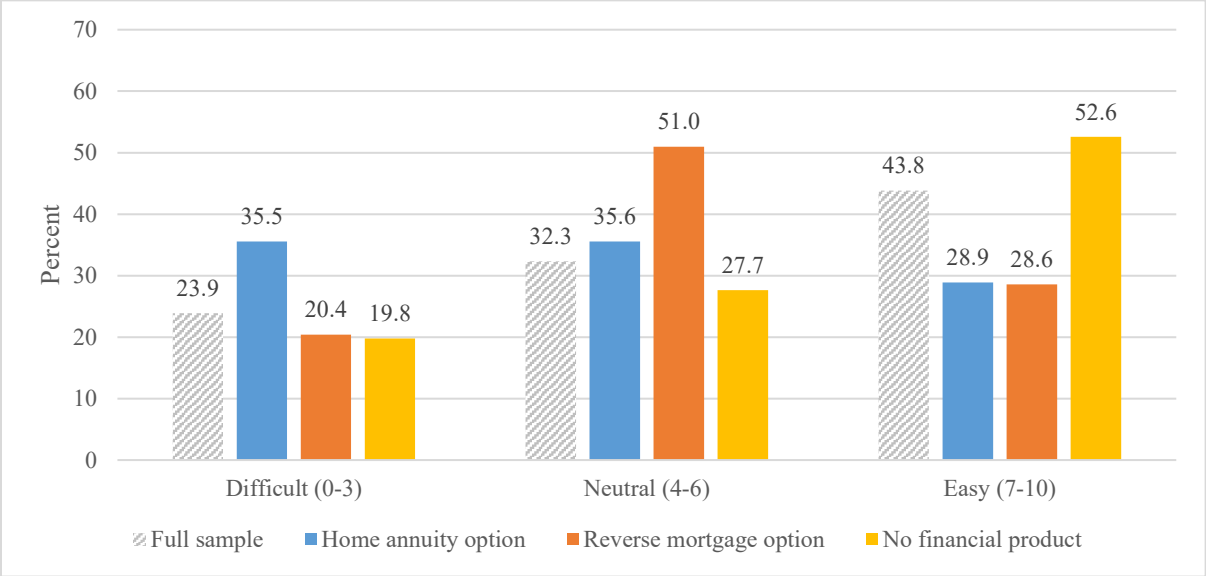
Panel A: Example of product choice in sequential presentation

Panel B: Example of opt-out choice in sequential presentation

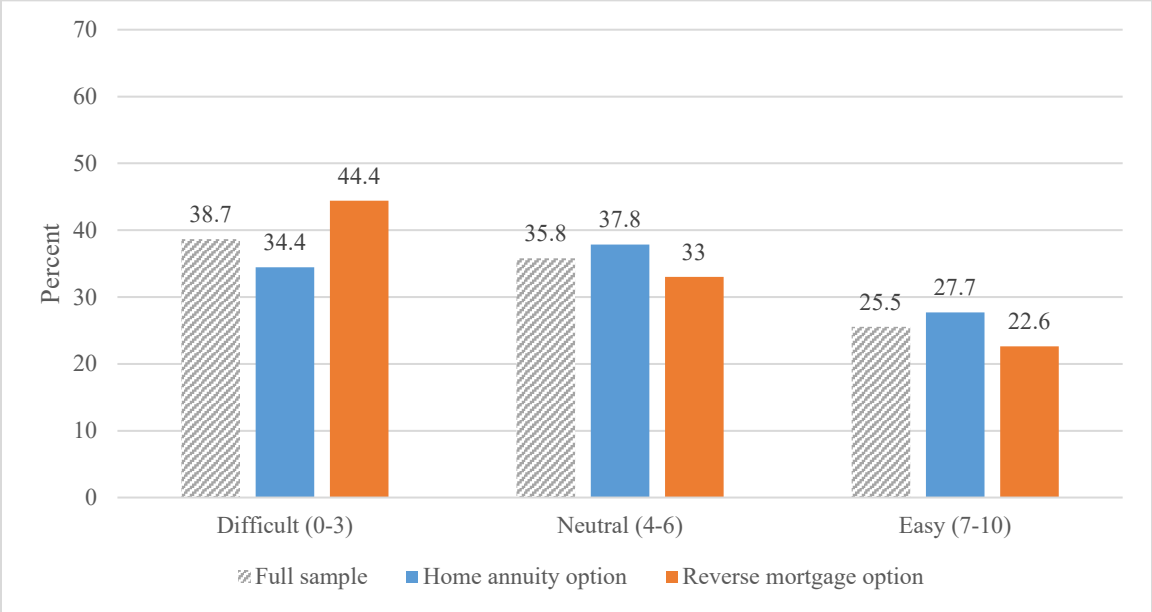
Appendix B: Robustness checks and additional figures and tables

Figure B1: Weighing up the options

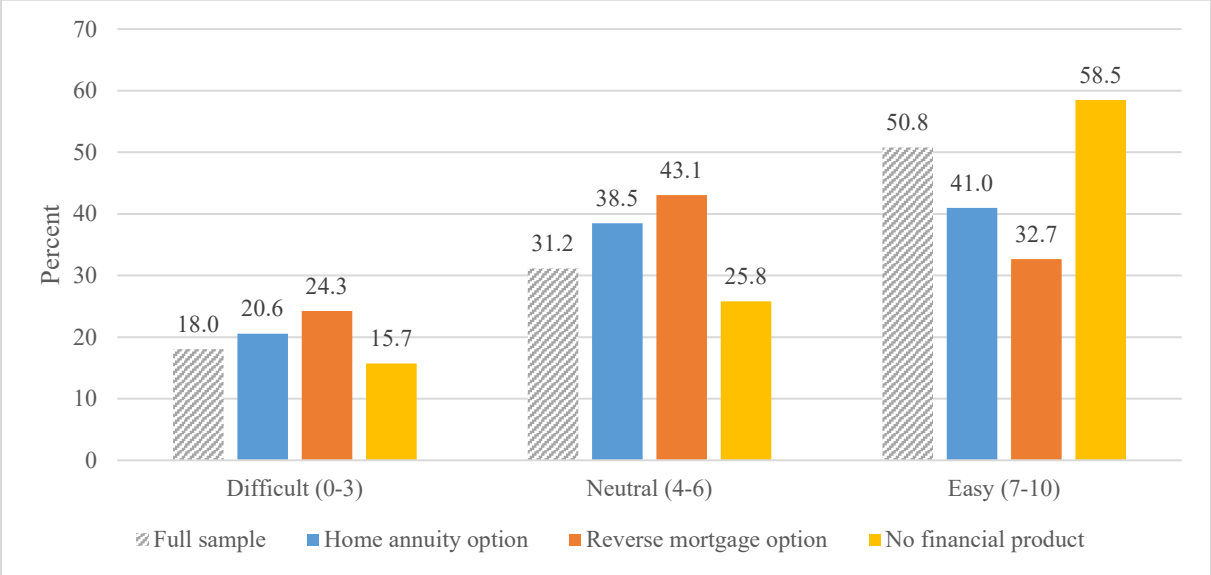
Panel A: Simultaneous presentation – Product choice (incl. opt-out choice)



Panel B: Sequential presentation – Product choice

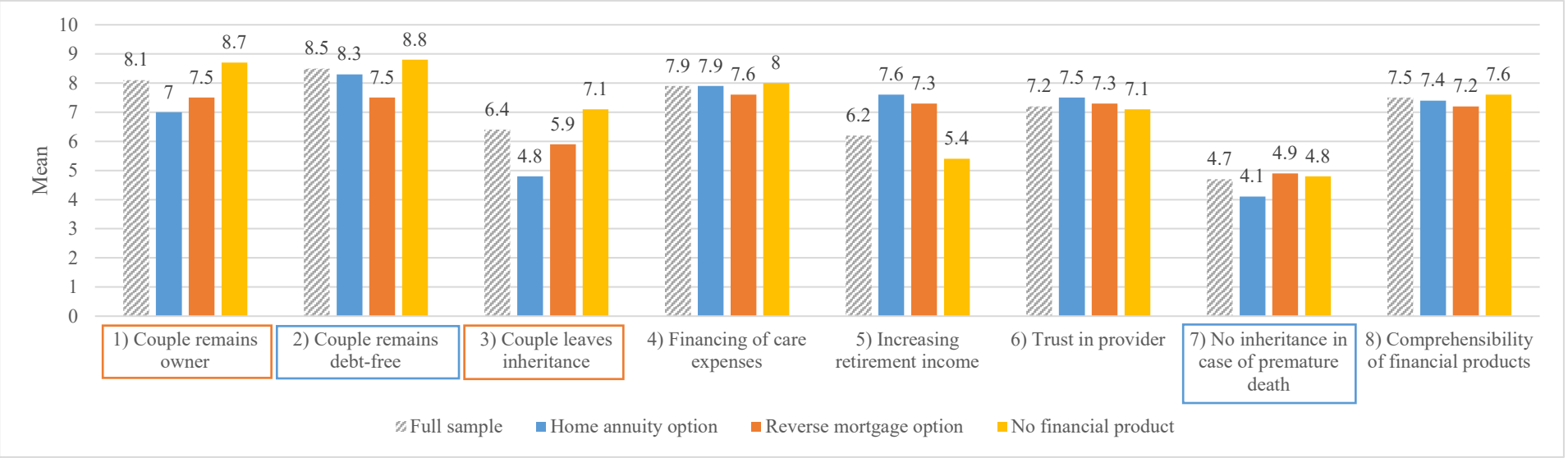


Panel C: Sequential presentation – Opt-out choice



Notes: Figure B1 shows how participants weigh up the options. Panel A displays the product choice (incl. opt-out choice) in the simultaneous presentation (N=1,285). Panel B displays the product choice in the sequential presentation (N=1,337). Panel C displays the opt-out choice in the sequential presentation (N=1,345). The question reads: "How easy was it for you to weigh up the options? Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy". In the figure, the scale is condensed to three groups: "Difficult" (0-3), "Neutral (4-6)", and "Easy" (7-10). Data is weighted.

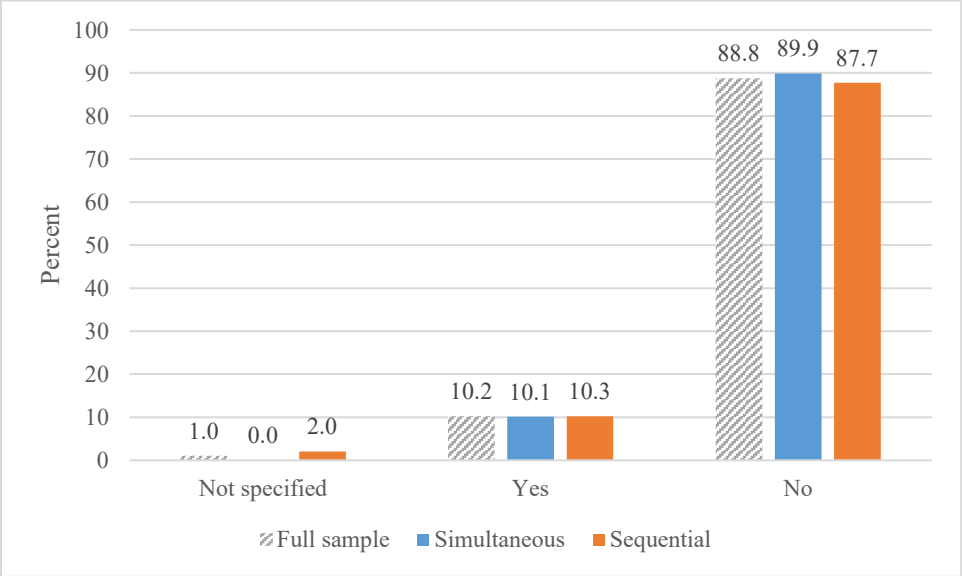
Figure B2: Understanding the product features



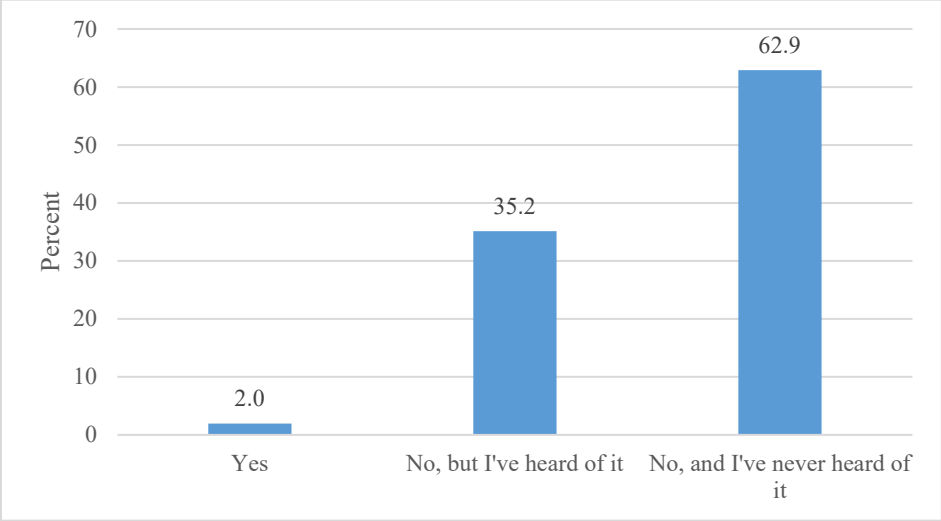
Notes: Figure B2 captures whether participants understand the product features. The question reads: "Please rate how important you consider the following aspects to be in your decision. Please rate using the scale from 0 to 10, where "0" means not important at all and "10" means very important". Eight product features are listed as follows: 1) The couple remains owner of the property (N=2,635). 2) The couple remains debt-free (N=2,627). 3) The couple can leave an inheritance (N=2,635). 4) Care costs can be financed (N=2,630). 5) Retirement income is enhanced (N=2,625). 6) Trust in the provider (N=2,608). 7) If the couple dies early, the heirs receive nothing (N=2,614). 8) The comprehensibility of the financial products (N=2,260). The statements marked in blue are associated with the home annuity option while the ones marked in orange are characteristic of the reverse mortgage option. Data is weighted.

Figure B3: Similar decision in real life

Panel A: Have you made a similar decision yourself or advised someone (e.g., your parents or grandparents) on such a decision?

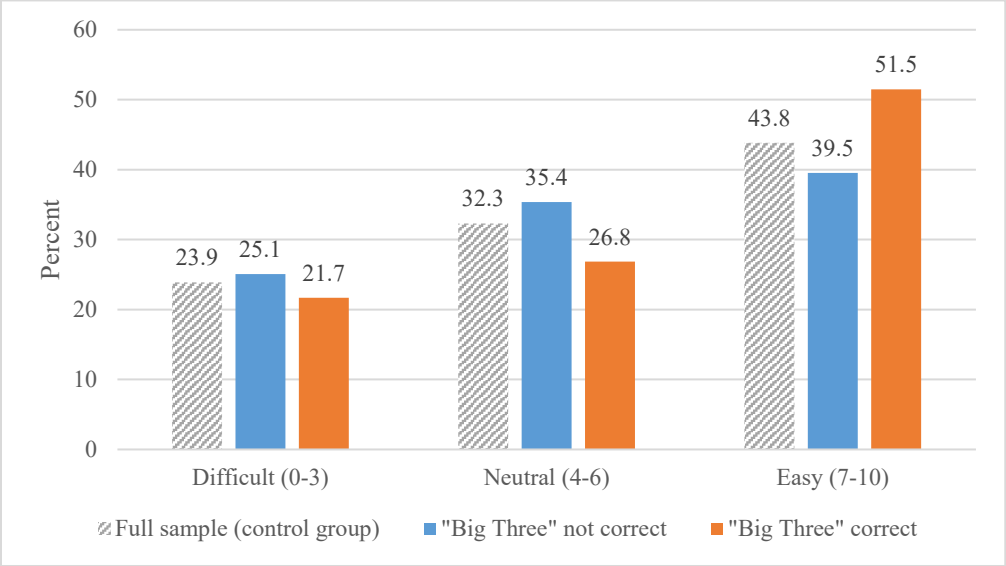


Panel B: Do you have a so-called reverse mortgage or a real estate annuity, i.e., a financial product that allows you to release capital tied up in your property and continue to live in your house or apartment?



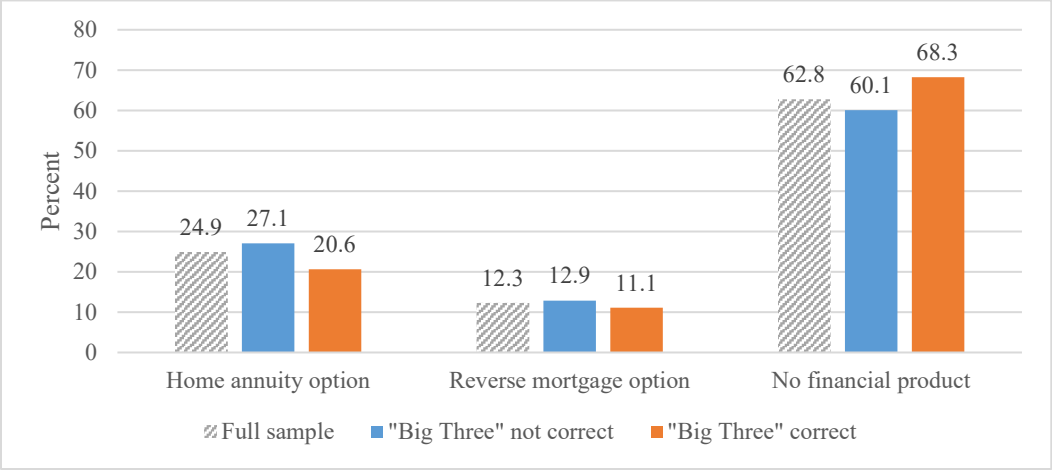
Notes: Figure B3 shows different aspects of whether participants had been confronted with a similar decision in their lives as in the experiment. In Panel A, participants indicate whether they made a similar decision for themselves or advised someone else, e.g., a parent or grandparent (N=2,654). In Panel B, homeowners indicate whether they have heard of a reverse mortgage before (N=1,191). Data is weighted.

Figure B4: Weighing up the options by financial literacy (Simultaneous presentation)



Notes: Figure B4 shows how participants weigh up the options in the simultaneous presentation for the full sample, those that did not answer the "Big Three" financial literacy questions correctly, and those that answered the "Big Three" financial literacy questions correctly. The question reads: "How easy was it for you to weigh up the options? Please rate using the scale from 0 to 10, where "0" means very difficult and "10" means very easy". In the figure, the scale is condensed to three groups: "Difficult" (0-3), "Neutral (4-6)", and "Easy" (7-10). N=1,285. Data is weighted.

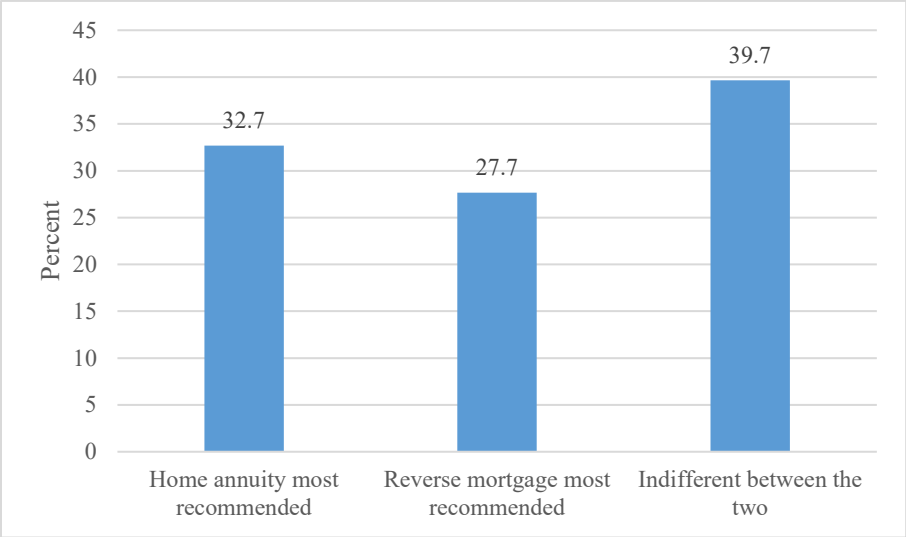
Figure B5: Final choice by financial literacy



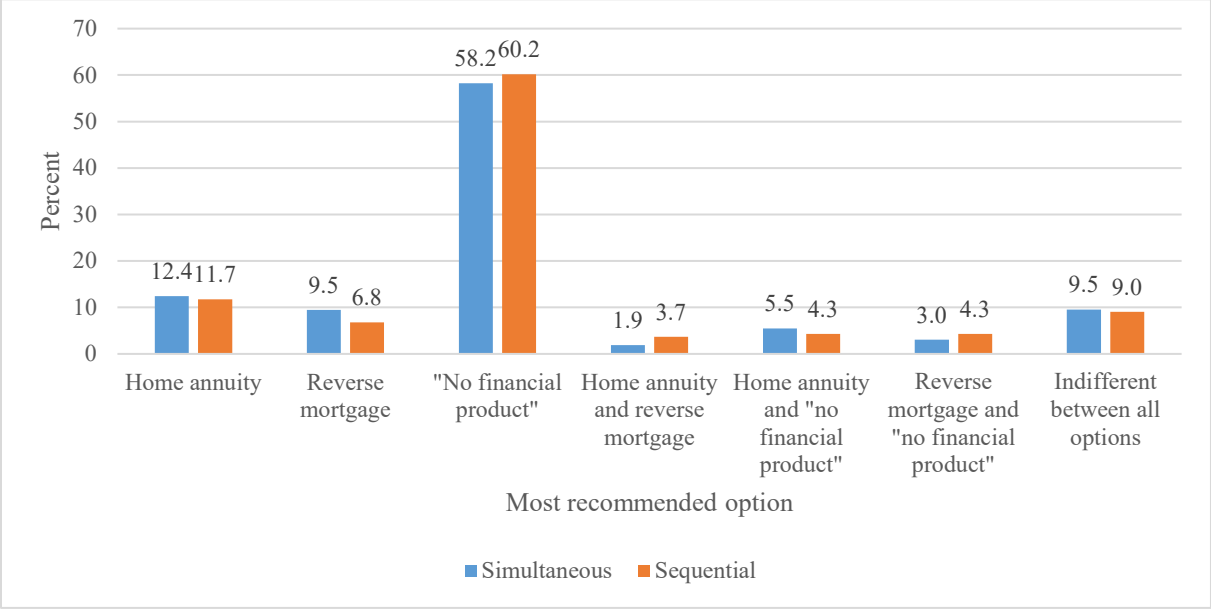
Notes: Figure B5 shows the final product choice for the full sample, those that did not answer the "Big Three" financial literacy questions correctly, and those that answered the "Big Three" financial literacy questions correctly. N=2,630. Data is weighted.

Figure B6: Plausibility check of "single product recommendations"

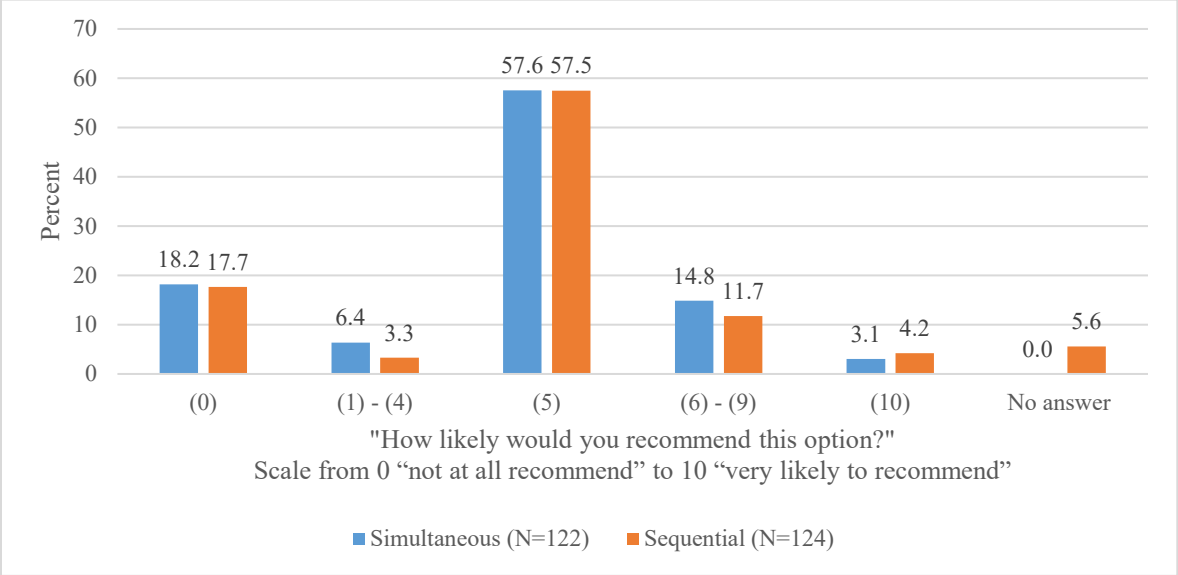
Panel A: Most recommended option in sequential treatment (Step 2a)



Panel B: Overall most recommended option



Panel C: Rating of those "indifferent between all options"



Notes: Figure B6, Panel A shows the ratings between the two home equity release products in the sequential presentation. N=1369. Panel B compares the different ratings in the single product recommendation across all three options in the simultaneous presentation (control group: N=1285) and the sequential presentation (treatment group: N=1369). It indicates which option is the most recommended one. Panel C shows the ratings for the subgroup of participants who were indifferent between the three options.

Table B1: Timeline of the German market for home equity release products

Table B1 provides an overview of the timeline of the German market for home equity release products between 2004 and 2015. It contains the date and product providers and differentiates between home reversion plans and reverse mortgages.

Date	**Product provider**
Home reversion plans	
2004	Stiftung Liebenau launched first home reversion plan in Germany
2013	Deutsche Leibrenten Grundbesitz AG began offering home reversion plans as well
Reverse mortgages	
2006	The German Savings Banks Association (DSGV) and the Association of German Public Banks (VÖB)first attempt to establish reverse mortgages in Germany
2009	Deutsche Kredit Bank (DKB) together with Immokasse offer the first reverse mortgage product on a national level
2013	Immokasse became insolvent and DKB left the reverse mortgage market as well
2015	Only an estimated number of 200 reverse mortgages were sold in Germany

Source: Based on Bartsch *et al.* (2021).

Table B2: Randomization check

Table B2 shows the randomization check between the treatment and the control group. Columns 1 and 2 show the mean and standard deviation (sd) for the full sample, respectively. Columns 3 and 4 summarize the mean of the control group and the treatment group, respectively. Column 5 contains the difference between the treatment and the control group (Delta). Column 6 reports the T-statistic (T-stat) in parentheses indicating whether the delta is statistically significantly different from zero. Significance levels are indicated as *** p<0.01, ** p<0.05, * p<0.1.

	Full sample		Control group (Simultaneous)	Treatment group (Sequential)	Simultaneous vs Sequential	
	(1) mean	(2) sd	(3) mean	(4) mean	(5) Delta	(6) T-stat
Demographics						
Female	0.528	0.499	0.504	0.552	-0.048**	(-2.463)
Age (in years)	55.721	14.564	54.674	56.724	-2.050***	(-3.637)
Household monthly disposable income						
Less than 1,500 Euro	0.279	0.449	0.266	0.293	-0.027	(-1.419)
1,500 to less than 2,500 Euro	0.271	0.444	0.275	0.266	0.008	(0.449)
2,500 to less than 3,500 Euro	0.221	0.415	0.223	0.219	0.004	(0.218)
3,500 Euro and more	0.229	0.42	0.236	0.222	0.015	(0.824)
Retired	0.395	0.489	0.373	0.416	-0.044**	(-2.299)
Controls						
Risk tolerance (0-10)	4.231	2.492	4.307	4.158	0.149	(1.543)
Stocks, equity funds, property funds (dummy)	0.305	0.461	0.32	0.291	0.03	(1.644)
Financial literacy score (0-5)	2.668	1.438	2.748	2.591	0.157***	(2.816)
"Big Three" correct (dummy)	0.335	0.472	0.356	0.315	0.041**	(2.25)
Homeownership (dummy)	1.457	0.498	1.465	1.449	0.015	(0.801)
Bequest motive (dummy)	0.59	0.492	0.598	0.582	0.016	(0.856)
Estimated future health (0-10)	6.318	2.278	6.345	6.293	0.052	(0.593)
Private supplementary nursing care insurance (dummy)	0.169	0.374	0.175	0.162	0.013	(0.894)
Trust in financial institutions (0-10)	4.307	2.573	4.353	4.263	0.091	(0.907)
Observations	2660		1302	1358	2660	

Table B3: Robustness check

Table B3 shows average marginal effects (ATE) from multinomial probit regressions with the final product choice for Mr. and Mrs. Müller as dependent variable. In Columns 1 and 2, the "no financial product" option serves as the baseline. In Columns 3 and 4, the home annuity option serves as a baseline, while in Columns 5 and 6 the reverse mortgage option is defined as the baseline. As a robustness check, this regression contains a retirement dummy. All regressions also contain a dummy that indicates whether participants have taken part in the financial literacy experiment that was included in our survey (results not shown). All variables are defined in Table C1 in Appendix C. Standard errors are shown in parentheses. Significance levels are indicated as *** p<0.01, ** p<0.05, * p<0.1. Using the full sample of N=2,642 in Columns 1, 3, and 5 does not change the results.

Dependent variable: Final product choice for Mr. and Mrs. Müller

	(1)	(2)	(3)	(4)	(5)	(6)
Baseline	No financial product	No financial product	Home annuity	Home annuity	Reverse mortgage	Reverse mortgage
VARIABLES						
Sequential treatment dummy	0.015	0.026	-0.023	-0.034*	0.008	0.007
	(0.021)	(0.020)	(0.018)	(0.018)	(0.014)	(0.014)
Female		0.018		-0.004		-0.013
		(0.021)		(0.019)		(0.015)
Age (in years)		-0.004***		0.003***		0.000
		(0.001)		(0.001)		(0.001)
Retired (dummy)		0.113***		-0.086***		-0.027
		(0.031)		(0.028)		(0.022)
Reference category: HH monthly disposable income less than 1,500 Euro						
1,500 to less than 2,500 Euro		0.050*		-0.007		-0.043**
		(0.028)		(0.025)		(0.019)
2,500 to less than 3,500 Euro		0.059*		-0.048*		-0.011
		(0.031)		(0.028)		(0.023)
3,500 Euro and more		0.089***		-0.073**		-0.016
		(0.033)		(0.029)		(0.024)
Risk tolerance (0-10)		-0.011***		0.004		0.007**
		(0.004)		(0.004)		(0.003)
Stocks, equity funds, property funds (dummy)		0.091***		-0.064***		-0.028
		(0.024)		(0.022)		(0.017)
Financial literacy score (0-5)		0.025***		-0.010		-0.015***
		(0.008)		(0.007)		(0.006)
Homeownership (dummy)		0.023		-0.059***		0.036**
		(0.024)		(0.021)		(0.017)
Bequest motive (dummy)		0.107***		-0.075***		-0.032*
		(0.023)		(0.020)		(0.016)
Estimated future health (0-10)		0.012***		-0.008**		-0.004
		(0.005)		(0.004)		(0.003)
Private supplementary nursing care insurance (dummy)		-0.074***		0.030		0.044**
		(0.028)		(0.025)		(0.018)
Trust in financial institutions (0-10)		-0.001		-0.007**		0.009***
		(0.004)		(0.004)		(0.003)
Observations	2,210	2,210	2,210	2,210	2,210	2,210

Appendix C: Variable definitions and representativeness of sample

Table C1: List of variables

Table C1 summarizes all variables used throughout the analyses. It contains the variable name, the original question, and the definition.

Variable name	Original question	Definition
Age (in years)	Age derived from "Year of birth"	Ages between 30 – 92 years
Bequest motive (dummy)	Are you planning to leave a bequest?	0 = No 1 = Yes
"Big Three" correct (dummy)		0 = "Big Three" not correct 1 = "Big Three" correct
Estimated future health status (0-10)	We would now like to know how you see the following aspects developing in the future. Your own health situation.	Scale from 0 to 10 0 "Very negative" 10 "Very positive"
Female	Are you…	0 = Male 1 = Female
Final product choice		0 = "No financial product" option 1 = Home annuity option 2 = Reverse mortgage option
FinLit experiment (dummy)	Was interviewed person part of the financial literacy experiment?	1 = Variant A (incl. Do Not know / No details) 2 = Variant B (without know / No + inquiry)
Financial literacy question 1 (Interest)	Suppose you have a deposit of 100€ in your savings account. The interest rate is 2% per year and you keep it on this account for 5 years. What do you think: How much money will be on your savings account after 5 years?	1 = More than € 110 2 = Exactly € 110 3 = Less than 110 € 4 = Don't know (only of Variant A) 5 = No information (only of Variant A)
Financial literacy question 2 (Inflation)	Suppose the interest on your savings account is 1% per year and the inflation rate is 2% per year. What do you think: Will you be able to buy more, less or the same amount of goods with the deposited money after one year?	1 = More 2 = Just as much 3 = Less than today 4 = Don't know (only of Variant A) 5 = No information (only of Variant A)
Financial literacy question 3 (Risk diversification)	Is the following statement right or wrong: "Investing in shares of a single company bears fewer risks than investing in a fund?"	1 = Agree 2 = Do not agree 3 = Don't know (only of Variant A) 4 = No information (only of Variant A)
Financial literacy question 4 (Interest on loans)	Suppose you take out a loan of 1000 Euro from the bank at an interest rate of 20% per year. If you don't pay off that loan and interest, how long will it take for the amount you owe the bank to double?	1 = Less than 2 years 2 = 2 to less than 5 years 3 = 5 to less than 10 years 4 = 10 years or more 5 = Don't know (only of Variant A) 6 = No information (only of Variant A)
Financial literacy question 5 (Debt repayment)	Suppose you have taken out a loan of 3000 Euro from the bank. You pay the minimum contribution of 30 Euro per month to the bank. The annual interest is 12% (or 1% per month). How many years does it take to pay off this loan?	1 = Less than 5 years 2 = Between 5 and 10 years 3 = Between 10 and 15 years 4 = Never, the debt remains. 5 = Don't know (only of Variant A) 6 = No information (only of Variant A)
Financial literacy score (0-5)	Sum of five financial literacy questions	0 - 5 number of correct answers
Homeownership (dummy)	Do you rent or own your own home?	0 = Tenant 1 = Homeowner

Variable name	Original question	Definition
Household monthly disposable income	How much do you estimate is the MONTHLY disposable net income of your household, i.e., the money that is available to the entire household after deduction of taxes and social security contributions to cover expenses? Please take into account the types of income listed in your answer. Wage, salary, income from self-employment, annuity or pensions, public aid income, rental income, lease income, housing benefit, child benefit, other income	0 = Less than 1,500 Euro 1 = 1,500 to less than 2,500 Euro 2 = 2,500 to less than 3,500 Euro 3 = 3,500 Euro and more
Private supplementary nursing care insurance	Do you have private supplementary long-term care insurance?	1 = Yes, without state subsidy. 2 = Yes, with state subsidy. 3 = Yes, but I don't know whether with or without a supplement. 4 = No, I don't have private supplementary long-term care insurance.
Private supplementary nursing care insurance (dummy)		0 = No 1 = Yes
Opt-out choice		0 = Stay with home equity release product 1 = Switch to "no financial product"
Retired	Are you retired, or in early retirement, or are you receiving a limited incapacity benefits?	0 = No 1 = Yes
Risk tolerance (0-10)	How do you assess yourself personally: How willing are you to take risks in general?	Scale from 0 to 10 0 "Not willing to take risks at all" 10 "Very willing to take risks"
Sequential treatment dummy		0 = Simultaneous presentation (control group) 1 = Sequential presentation (treatment group)
Stocks, equity funds, property funds (dummy)	Did you (i.e., your household) own any of the following types of assets in December 2019?	0 = No 1 = Yes
Trust in financial institutions (0-10)	How much do you agree with this statement? In general, banks and financial institutions in Germany can be trusted.	Scale from 0 to 10 0 "Don't agree at all" 10 "Completely agree"

Table C2: External validity

Table C2 shows an external validity check of the control variables used in the analyses (Column 1). Columns 2-5 contain the number of observations (N), mean, median, and standard deviation (Std. Dev.), respectively. Column 6 summarizes population averages found in other studies. Column 7 lists the sources for the data used in Column (6).

(1)	**(2)**	**(3)**	(4)	(5)	(6)	(7)
Variable	**N**	**Mean**	**Median**	**Std. Dev.**	**External validity (population average)**	**Source**
Risk tolerance (0-10)	2,654	4.194	4	2.536	Using the same exact measure in a representative German sample in 2004 a study achieves a similar average of 4.42.	Dohmen *et al.* (2011)
Stocks, equity funds, property funds (dummy)	2,636	0.300	0	0.458	In 2020, 17.5% of the population aged >14 was invested in stocks, equity funds.	DAI (2020)
Financial literacy score (0-5)	2,660	2.608	3	1.454	Comparable measures achieve similar and slightly higher results for Germany and similar results for Italy	Bucher-Koenen and Lusardi (2011) Fornero *et al.* (2016) Klapper *et al.* (2015)
Home ownership (dummy)	2,660	0.451	0	0.498	Per construction of sample Eigentümerquote Dt 2018 (Bewohnte Wohnungen in Wohngebäuden (ohne Wohnheime): 46.6 %	Destatis (2021)
Bequest motive (dummy)	2,650	0.585	1	0.493	Comparable measures achieve similar results in the Netherlands, and lower values in the US.	Dillingh *et al.* (2017) Moulton *et al.* (2017) Suari-Andreu *et al.* (2019)
Estimated future health (0-10)	2,644	6.296	7	2.279	No comparable measure found.	
Private supplementary nursing care insurance (dummy)	2,657	0.160	0	0.367	In 2020, only 5.44% of the population aged >18 had supplementary nursing care insurance.	Destatis (2021)[24] PKV (2024)[25]
Trust in financial institutions (0-10)	2,657	4.335	5	2.594	Comparable measures from the World Value Survey and an Italian household Survey achieve slightly higher values.	Ahunov and Van Hove (2020) Ampudia and Palligkinis (2018)

[24] *Source:* Destatis (2021), Pressemitteilung Nr. 287 vom 21. Juni 2021, https://www.destatis.de/DE/Presse/Pressemitteilungen/2021/06/PD21_287_12411.html, last accessed September 12, 2024.

[25] *Source:* Verband der Privaten Krankenversicherung (2024): https://www.pkv.de/wissen/pflegepflichtversicherung/vorsorgen-mit-der-pflegezusatzversicherung/, last accessed September 12, 2024.

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